The Development of Dysfunctional Expertise in Burglars: Pathways into Crime and the Implications for Offender Rehabilitation and Situational Crime Prevention.

Doctoral Dissertation

by

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General Abstract

Residential burglary is a prevalent crime with far-reaching consequences for its victims. In 2017, in England and Wales alone, 650,000 burglaries or attempted burglaries were committed (Office for National Statistics, 2017) with the social and economic cost of each burglary estimated at nearly £6,000 (Heeks, Reed, Tafsiri & Prince, 2018). Historically, there has been an assumption that those who commit burglary do so as a result of low self-control and in response to an irresistible opportunity (e.g. Gottfredson & Hirschi, 1990). More recent research, however, indicates that experienced burglars demonstrate superior decision-making than would be possible for the novice or non-burglar (Nee, 2015). These competencies (comparable to expertise in non-offending fields) have led to the proposal of a theory of 'dysfunctional expertise' to explain the skilful undertaking of a residential burglary.

The overarching purpose of this thesis was to examine in more detail the cognitions, emotions and behaviour of younger and older burglars in order to investigate the extent to which offence-related decision-making may be guided by expertise at different stages of the criminal career. Four key aims were addressed: 1) to build on emerging evidence for the use of virtual reality (VR) as a method to investigate offending behaviour in an empirical and ethical way; 2) to look in more depth in the time period leading up to a burglary (the decision to offend); 3) to compare indicators of expertise in the commission of a virtual burglary by younger and older burglars; and 4) to examine the largely neglected time period after the offence.

A mixed methods approach, involving the use of a simulated 'virtual' environment combined with a 'think aloud' protocol and a semi-structured interview, was used to better understand how expertise might develop over time and with experience. **In Study 1,** this novel method to enhance offender recall and motivation to disclose information (the Virtual Enactment Method, VEM), was developed and trialled using a sample of 61 male incarcerated burglars (age range 20-56 years, M_{age} = 37.64 years; SD = 8.59). The VEM allowed for the observation of 'offending' behaviour, which, by the nature of expertise, may be automatic and beyond the conscious recall of the experienced offender; therefore, minimising the memory and social desirability issues that have negatively affected data gathered during interview studies in the past. The findings of this study, for which the author of this thesis was lead researcher and author, showed that the use of the VEM was effective in reinstating the criminogenic event, increasing engagement, enhancing recall, and encouraging participants to talk more openly about their experiences, skills and knowledge.

Having established the value of this method, the author of the current thesis designed the subsequent three studies, in which the VEM was used to provide a more in-depth description of the burglary event as a whole, incorporating discussion of the role of expertise. A sample of 70 incarcerated male burglars, made up of 37 younger (18-21 years, M_{age} = 20.30, SD = 1.43) and 33 older (<21 years, M_{age} = 39.19, SD = 9.93) burglars was used for these studies. While the age of the offender may not directly reflect experience, the comparison of offenders by age enabled the

development of expertise to be considered alongside other age-related factors that influence motivation and offence-related decision-making. Aspects of expertise have been demonstrated to accrue quickly in young offenders (e.g. Logie, Wright & Decker, 1992), but expertise does not then develop in a linear manner. Patterns of offending, cognitive development and aging are all examples of factors that may affect the speed and extent to which expertise is refined. The nature of expertise is also likely to differ between young and adult burglars, thus the distinction between younger and older burglars adopted for this thesis enables examination of the differences in decision-making and behaviour between the groups, providing clues to the development of offence-related expertise. In **Study 2**, the reasons provided for getting involved in and maintaining involvement in burglary were examined. The findings highlighted the key role that affect (i.e. the thrill of the offence) plays in encouraging ongoing participation in burglary. Positive emotional reward was an important motivating factor in the early days of burglary experience, and encouraged the repeated offending necessary for the development of expertise. Expertise, in turn, influenced the increasingly habitual engagement in burglary over time. Thus, Study 2 identified an important interaction between emotion, cognition and expertise on diversification, specialisation, persistence and desistance from crime. **Study 3** examined the development of expertise within burglar groups, through analysis of the actual undertaking of a 'virtual' burglary by younger and older burglars. Findings suggested that indicators of expertise were evident in both groups; hence, expertise develops from relatively early in the burglar career. However, compared to the younger burglars, the older burglars demonstrated more developed expertise in relation to key procedural skills (the search of the property and the identification of high level goods). Finally, **Study 4** examined the (to date, relatively neglected) time period after completion of a burglary. Findings suggested that expertise is less pronounced during this time than is observed in the initial decision to offend and the actual commission of the offence; however, this may be due to a reduced need for such developed skill, specifically in the conversion of stolen goods. The automaticity that develops as part of expertise, however, may be influential in the proliferation of burglary over time, and in specialisation in this type of offending.

To summarise, the research presented in this thesis provides a valuable contribution to understanding the cognitive and emotional processes that interact across all aspects of participation in residential burglary. In addition, a novel method for uncovering offence-related decision-making (the VEM) is presented. Together, these provide the opportunity to establish a deeper understanding of the decision processes that lead to burglary. This understanding has implications for crime prevention and rehabilitation strategies that utilise understanding of offender cognitions to reduce the incidence and impact of burglary. Further, the findings are not only important for the study of residential burglary, but also have the potential to be applied to a wider range of offences, particularly those which have been demonstrated to incorporate similar, expertise-based learning (e.g. sexual offences).

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Declaration

Whilst registered as a candidate for the above degree, I have not been registered for any other

research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other award.

Amy Meenaghan

Word count = 57,340

List of Tables and Figures

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List of Abbreviations

ANOVA: Analysis of variance

DEM: Dysfunctional expertise model

RCT: Rational choice theory

MANOVA: Multivariate analysis of variance

VEM: Virtual enactment method

VR: Virtual reality

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Publications

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Related Publications

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Conference presentations

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Meenaghan, A., Nee, C., Van Gelder, J.L., Vernham, Z. & Otte, M. (2018, June). A qualitative analysis of the initiation into crime in a sample of young residential burglars. Paper presented at the British Psychological Association (BPS) Division of Forensic Psychology Annual Conference.

Meenaghan, A., Nee, C., Van Gelder, J.L., Vernham, Z. & Otte, M. (2017, May). Using virtual environments to understand the behaviour of burglars. Paper presented at the European Association of Psychology and Law Conference (EAPL), Mechelen, Belgium.

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Chapter 1

Introduction

The study of residential burglary provides a valuable opportunity to uncover the processes and motivations behind a crime with far reaching financial and emotional impact on its victims (Kershaw, Budd, Kinshott, Mattison, Mayhew & Myhill, 2000). Broadly, burglary refers to the entering of a building or part of a building as a trespasser, and having done so, stealing or attempting to steal belongings or money (Office for National Statistics (ONS), 2017). In 2017, in England and Wales alone, 650,000 burglaries or attempted burglaries were committed (Office for National Statistics, 2017) with the social and economic cost of each burglary estimated at nearly £6,000 (Heeks, Reed, Tafsiri & Prince, 2018). Clearance rates for burglary are historically low (around 17% in England and Wales; Smith, Taylor & Elkin, 2013), suggesting that many offenders are able to continue to offend for extended periods with relatively low risk of apprehension (Mawby, 2001). In addition, burglary has been reported to be one of the crimes that is feared the most, partly due to the public's perception of a high likelihood of victimisation (Ceccato, 2016; Warr, 2000), but also due to the invasive nature of the offence and its associated impact on the victim (Kershaw et al., 2000). From the perspective of the offender, frequent and repeated burglary is often required to maintain what is commonly an expensive lifestyle, characterised by drug use and 'partying' (e.g. Matza & Sykes, 1961; Shover, 1996; Wright & Decker, 1994). Decades of research into residential burglary have demonstrated that in contrast to the common perception of burglary as an opportunist crime, many residential burglars exhibit specific skills and knowledge that enable them to complete a 'safer' and more lucrative burglary (Nee, 2015), a factor which may play a key role in the continued and increasing participation in burglary by individual offenders.

From the very early interviews with experienced burglars (e.g. Bennett & Wright, 1984; Shover, 1973), through ground-breaking ethnographic studies (e.g. Cromwell, Olsen & Avery, 1991; Wright & Decker, 1994), and the use of increasingly sophisticated experimental methods (e.g. Nee & Taylor, 1988; 2000; Nee, White, Woolford, Pascu, Barker & Wainwright, 2015; Nee, Van Gelder, Otte, Vernham & Meenaghan, 2019), skills and knowledge, developed through practice and learning, have been observed and reported in the commission of a burglary offence. These studies all indicate superior decision-making and cognitive processes in burglars compared to non-burglars (for example, students, householders, police officers, and non-burglar offenders; Nee, 2015), enabling the more successful commission of the crime. Identification of skilled decision-making such as this has led to the proposal that the undertaking of a burglary may be guided by expertise, comparable to that observed in more normative fields, such as chess mastery, or learning to play a musical instrument (Nee & Ward, 2015). To date, research has understandably focussed firstly on the processes involved in the actual selection of a target (e.g. Bennett & Wright, 1984; Cromwell et al., 1991; Nee & Taylor, 1988; 2000; Taylor & Nee, 1988; Wright & Decker, 1994), and secondly the search of the property (e.g. Clare, 2011; Nee & Meenaghan, 2006; Nee et al., 2015; Nee et al., 2019; Wright & Decker,

1994). These aspects of the offence provide valuable learning for crime prevention initiatives but neglect to consider the decision-making processes before and after the actual burglary. Nee (2015) proposed that the commission of a burglary is the result of a series of decisions rather than a response to a single triggering event or circumstance. Accordingly, an understanding of the context within which these decisions are made is essential for understanding the burglary offence chain. Evidence for specific and effective cognitive processes that develop as a result of experience in burglary (see Nee, 2015) promote the idea that a wider understanding of interrelated decisions that lead to burglary may allow for a better understanding of why offenders may engage in, and potentially specialise in burglary. The current research aimed to 1) build on the emerging evidence for the use of virtual reality (VR) as a method to understand more clearly the behaviour and cognition of offenders as they offend in real time, in an empirical and ethical way; 2) focus on the actual burglary event, starting with the time period leading up to a burglary (the decision to offend); 3) investigate the development of expertise over time and with experience, by comparing the indicators of expertise in the actual commission of the offence in younger and older burglars, and 4) examine the largely neglected time period after the offence (e.g. selling stolen goods and beyond). In this way, the thesis aimed to build a clearer picture of the entire burglary event, incorporating both the route into regular burglary involvement, and also the combinations of decisions that lead to the undertaking of a specific offence.

This chapter will first provide brief context regarding the study of residential burglary, before defining and discussing the components of expertise. Evidence of expertise in residential burglars will then be outlined. Research relating to the decision to offend, target selection, the search of the property, and actions after the burglary will be considered. Finally, the presented evidence and theory will be drawn together in order to provide a rationale for the current thesis.

The Study of Residential Burglary

The proposition that burglary related decision-making may be guided by expertise draws from extensive research suggesting skills and script-like knowledge in experienced offenders (e.g. Cromwell, Olsen & Avery, 1991; Maguire & Bennett, 1982; Nee & Meenaghan, 2006; Nee & Taylor, 1988; 2000; Wright & Decker, 1994). Even the very early burglary research indicated that rather than being an opportunistic offence, for most burglars, some degree of rationality guides the decision to offend. Burglaries rarely happen on the spur of the moment, instead they are usually the result of a series of decisions (Nee, 2015) commonly in response to a need for money (e.g. Bennett & Wright, 1984). Using interviews with experienced and prolific burglars, Shover (1972, p. 541) identified the 'good burglar' – one who would embark on scouting trips to identify suitable targets, and who would then demonstrate some level of technical skill in the selection of a specific property. Target selection is key to the commission of a successful burglary, both in terms of the potential for financial gain, but also in reducing the risk of apprehension (Hockey, 2016). Early interview studies that looked at the impact of the environment on the burglary offence (e.g. Reppetto, 1974; Scarr, 1973; Waller &

Okihiro, 1978) suggested that experienced burglars showed skill in their assessment of environmental cues indicating, for example, the likely wealth, security and accessibility features of a property. The

processes by which such skills develop appeared to be indicative of learning through experience, evidenced in the tendency to target areas and properties that had proved successful in the past (Nee, 2015).

Thus, the very early research unearthed and promoted approaches to understanding burglary that focussed on offender decision-making and the impact of learning and developing skill. Different strands of research emerged, using different methodological approaches, and focussing on various populations and samples. In order to address criticisms relating to the use of interview methods (e.g. deliberate or unintentional misreporting, Bradburn, Rips & Shevell, 1987; Elffers, 2010; Kearns & Fincham, 2005; Nisbett & Wilson, 1977), increasingly sophisticated experimental methods were trialled and tested (e.g. Bennett & Wright, 1984; Nee & Taylor, 1988; 2000; Taylor & Nee, 1988). Concerns regarding the focus on incarcerated populations resulted in ambitious ethnographic studies, capitalising on the naturalistic settings available through interviewing offenders in and around the areas in which they had committed their crimes (Cromwell, Olsen & Avery, 1991; Wright & Decker, 1994). A focus on opportunities for crime prevention from within the emerging field of environmental criminology utilised complex statistical analyses to identify the physical and temporal aspects of the environment that influence criminal activity (e.g. Brantingham & Brantingham, 1991). Despite differences between theoretical and methodological approaches, they all provide support for an emerging theory of expertise in offenders (Nee & Ward, 2015).

Expertise

Expertise in the normative, non-offending fields of cognitive and social psychology comprises the study of the development of cognitive processes that enable the expert to perform in a superior manner to those without the benefit of such learning. Key work identifying the components of expertise has considered pro-social fields such as chess (e.g. Chase & Simon, 1973; De Groot & Gobet, 1996; Gobet & Charness, 2006), bridge (e.g. Charness, 1979), music (e.g. Lehmann & Gruber, 2006), as well as the diagnosis of medical conditions (e.g. Patel, Groen & Norman, 1993). Cognitive processes associated with expertise are faster and more effective, and importantly, are triggered automatically in response to relevant environmental cues (Ericsson, 2006). The expert need not be fully aware of the cues or associated scripts (Chase & Simon, 1973), however, they enable behaviour and decision-making, guided by prior learning, that promotes successful outcomes in the domain of expertise.

Expertise accrues through practice and learning. With ongoing and repeated practice, an individual becomes more attuned to the cues in the environment that are most relevant to the domain of expertise. Consequently, these cues are attended to with greater focus than less relevant or unrelated cues (Chartrand & Bargh, 2002). Over time, relevant cues, associations between them, and related inferences about the environment are *chunked* together in long-term memory, enabling them to

be retrieved more readily (Shanteau, 1992). The expert is then able to respond to the environment more efficiently and speedily using this more structured memory. As experience continues to build, effective responses to presented cues also become incorporated, producing *cognitive schema* (Fiske &

Taylor, 1991), which are essentially guidelines on responses to specific circumstances related to the individuals' expertise. Given a specific set of circumstances, a response (one that has proved effective in the past) is triggered and completed without the requirement of explicit deliberation. Key decision making then occurs in a 'pre-conscious', automatic manner (Bargh, Gollwitzer, Lee-Chai, Barndollar & Trotschel, 2001; Klein, 1993). The benefit for the expert is a reduction in the cognitive processing required to complete the task associated with experience, freeing up cognitive capacity for attending and responding to novel stimuli in the environment (Palmeri, Wong & Gauthier, 2004; Shanteau, 1992) - the expert is therefore able to multitask (Logan & Etherton, 1994). An additional effect of the development of automaticity is that experts remain constantly attuned to the presence of cues in the environment that are relevant to their area of expertise. As such, the expert is 'eternally vigilant' to relevant cues (Bargh, 1994, p.5). Expert decisions, therefore, may take place below conscious awareness through a process of ongoing assessment and evaluation. Finally, expertise allows decisions to be made based on inference, using only partial information, and enabling scripts to be generalised to partially familiar scenarios. In practice, this means that the expert can extend their skills and knowledge beyond their direct experience, increasing the scope of their expertise to a wider range of situations and environments (Duckworth, Bargh, Garcia & Chaiken, 2002).

Expertise requires learning and concerted practice (Chi & Bassok, 1989). With ongoing practice, cognitive schema continue to develop, becoming more detailed and interconnected, enabling expertise to develop and refine over time, and decisions and responses become faster and more accurate (Chi, Feltovich, & Glaser, 1981; Klein, 1993). Early work using visual search and detection tasks (e.g. Schneider & Shiffrin, 1977) assumed that thousands of repetitions of a relevant action would be necessary for the development of expertise to occur. This would limit the scope of expertise to those who engage in ongoing and focussed practice (e.g. Simon & Chase, 1973). However, this has since been disputed, with evidence of expertise being observed very early on in the learning process (Bargh, 1994). Consequently, expertise is largely assumed to be a continuum (Chi & Bassok, 1989; Hoffman, Shadbolt, Burton & Klein, 1995), with very few individuals maintaining ongoing learning beyond that which allows for successful performance in their domain of expertise (Ericsson, 2006). Instead, most people perform at a level that can be described as *functional expertise* (see Nee & Ward, 2015). This enables a task to be carried out successfully, efficiently, and with superior skill to novices, but does not require the concerted practice needed for excellence. This is key to understanding the decision-making and behaviour of experienced residential burglars', as described in Nee and Ward's (2015) theory of *dysfunctional expertise.*

Dysfunctional Expertise

In line with Gottfredson and Hirschi's (1990) general theory of crime, those who commit crime have traditionally been assumed to be impulsive, lacking in skill, and driven by a lack of self control. Detailed analysis of the decision-making and behaviour of offenders with experience in

various crimes (e.g. burglary, Nee & Meenaghan, 2006; identity theft, Vieraitis, Copes, Powell & Pike, 2015; street robbery, Topalli, 2006; sexual offending, Bourke, 2012; homicide, Brookman, 2015; and firesetting, Butler & Gannon, 2015) has shown that, in contrast to this perspective, a wide range of crimes actually require specific skills and knowledge for their successful completion.

Further investigation of these skills and the decision-making processes used by those who possess them led Nee and Ward (2015) to propose that the cognitive processes involved align well with the components of expertise described above. They formulated a theory of 'dysfunctional expertise' to describe and explain such offence-related decision chains, and described four stages of decision-making that take place in the lead up to an offence. First, the offender undertakes an appraisal of the environment. Due to extensive experience, this appraisal is often below conscious awareness, and takes place automatically and without deliberate intention. Importantly, it is an ongoing process, akin to the 'eternal vigilance' described by Bargh (1994, p.5). Second, environmental cues relevant to the offence are recognised automatically. This process is more efficient and effective than would be possible without relevant experience. Third, cognitive schema, developed through experience, are triggered enabling access to related heuristics. These heuristics guide the fourth phase, in which behavioural responses based on previous successful offences are played out, enabling the crime to be completed in a relatively automatic manner. According to Nee and Ward (2015), the expertise paradigm has the potential to extend existing rational choice-based theories of offending (e.g. Cornish & Clarke, 1986). Expertise provides an explanation for the psychological mechanisms underlying the heuristic models and cognitive processes that allow an offender to respond effectively to environmental cues, quickly and efficiently, even when information about the environment may be incomplete (Johnson & Payne, 1986). It also adds depth to the understanding of the processing of cues used in target selection, the search of the property, and the conditions that lead (sometimes pre-consciously) to the undertaking of a burglary.

Key to the rationale for studying expertise in offenders is the potential to inform crime prevention and intervention strategies. An understanding of offender decision-making offers the opportunity to exploit some of the inherent limitations of expertise. As noted by Nee and Ward (2015), the experts' reliance on cognitive scripts has the benefit of increasing the speed and accuracy of decision-making. However, it also may result in errors when information is limited or ambiguous (Klein, 2009), or when decisions are made under pressure (Nee & Ward, 2015). When presented with unusual stimuli, decision-making requires the balancing of existing scripts with new information, producing the potential for cognitive overload. Similarly, expert decision-making can be associated with inflexible thinking, overconfidence, and reduced creative problem solving (Dror, 2011). Nee and

Ward (2015) suggested that by incorporating unusual or unexpected stimuli into the environment, cognitive scripts may be disrupted sufficiently to result in the abandoning of the offence. Dror (2011) also noted that expertise may be context specific (i.e. limited to the actual burglary). Decision-making in other domains (i.e. away from the target property) may be less skilled. This notion is supported by the chaotic nature of many acquisitive offenders' lives (Farrington & Welsh, 2007), one which may

provide a valuable opportunity for targeted crime detection strategies.

The evidence described above shows the value of applying knowledge related to skilled decision-making in attempts to both explain and reduce offending behaviour. While decision-making that aligns with expertise has been observed in a range of offence types, the study of residential burglary provides the most detailed example of offender decision-making in relation to expertise. This will be used below to demonstrate the potential for an expertise paradigm to understand offending behaviour and guide interventions and crime prevention strategies.

Expertise and Residential Burglary

Motivation and Initial Decision to Burgle

The first consideration in the journey to burglary is the decision to offend. This comprises the motivation to burgle, and the processes by which this motivation converts into selecting and going through with a specific burglary. Financial gain is unsurprisingly the most frequently cited reason behind the decision to offend (Bennett & Wright, 1984; Cromwell et al., 1991; Nee & Taylor, 1988). However psychological motivations (e.g. excitement and revenge) have been identified as almost as important as financial gain in the decision to burgle (Cornish & Clarke, 2006; Cromwell et al., 1991; Wright & Decker, 1994). In addition to the thrill and adrenaline rush associated with breaking into a property, the anticipation of the subsequent events (the 'good time' afforded by the attained funds) may be an additional motivator (Shover & Honaker, 1992). This anticipation has similarly been observed in a range of other types of acquisitive offences (e.g. shoplifting, Cromwell, Parker & Mobley, 2003; street robbery, De Haan & Vos, 2003), further asserting the importance of considering emotional alongside financial gain. Hand in hand with the motivation to offend is the decision to, first, select an offence type, and second, select a target. Historically, Rational Choice Theory (Cornish & Clarke, 1986) has provided an important framework for understanding an individuals' 'choice' to offend. Aspects of the theory of dysfunctional expertise fit well within this framework – as expertise accrues, the offender can commit a safer and more lucrative offence, thus shifting the assessment of risk and reward towards the decision to offend. The well-developed cognitive scripts that result from increasing competence provide an explanation for the quick and efficient decision-making required, despite the often incomplete and imperfect information provided in the environment. In considering the role of the 'thrill' of the offence, Van Gelder, Elffers, Reynald and Nagin (2013) propose that theories of criminal decision-making must account not only for the prediction of financial gain in the cost-benefit analysis of traditional rational choice theories, but also emotions experienced prior to, and during decision-making. In addition to the impact of the immediate situation on decision-making,

mood states unrelated to the criminogenic situation (affecting, for example, the assessment of risk) may also play an important role. As such, the experience of emotion and mood can serve as triggers for criminal motivation and can influence the judgement of the environment and situation, perhaps resulting in more reckless behaviour (Van Gelder, de Vries & Van der Pligt, 2009), or triggering expertise scripts and schemas (Nee & Vernham, 2017).

It is possible that the importance of affective factors (e.g. excitement) will be more

pronounced in younger than older offenders, as it is established in the developmental literature that adolescence is a period during which individuals are more likely to engage in thrill seeking behaviour (Arnett, 1994; Zuckerman, Eysenck & Eysenck, 1978), though this has never been explored with young burglars. Alternatively, it may be that the older offenders who continue to engage in crime and burglary still strive for this experience in adulthood, reflected in the reportedly hedonistic lifestyle of adult as well as younger offenders (e.g. Farrington & Welsh, 2007). The current programme of research will therefore consider the importance of affective gain across younger and older offenders. In relation to this, the role that expertise plays in the decision to offend will be considered. It is proposed that prior learning and developed skill have the potential to impact on a range of factors, including target selection, the use of accomplices, frequency of offending, and specialisation in offence type (as domain specific skills are embedded). However, the specific role that increased competence plays (if any) in the very early stages of the offence chain is, as yet, unclear.

Expertise in the Decision to Offend and Target Selection

As noted above, for most offenders, the decision to offend is made away from the scene of the crime, often in response to a need for funds (Bennett & Wright, 1984). Exploratory interview work of the late 1970's (e.g. Scarr, 1973; Shover, 1973; Reppetto, 1974; Waller & Okihiro, 1978) suggested the possibility of some learning at the scene of the crime, drawing the focus towards the assessment of cues within the environment in target selection decisions. As such the possibility of decision-making processes that may be guided by expertise started to arise. These studies, however, relied on self reported accounts of decision-making and behaviour and were therefore prone to the critiques common to all interview-based research. These include intentional misreporting (e.g. exaggerating or minimising actions, Elffers, 2010; Kearns & Fincham, 2005) and unintentional misrepresentations (e.g. forgetting, reversing the sequence of events and time distortion, Bradburn, Rips & Shevell, 1987; Nisbett & Wilson, 1977). Memory is inherently fallible, and data gained through interview techniques alone must therefore be interpreted with caution. Of particular importance to the study of offending behaviour is the fact that interviews with offenders (especially those conducted with an incarcerated population) often occur in a setting far removed from the actual scene of the crime, raising questions regarding the reliability and validity of data gathered in this way (see Copes, Jacques, Hochstetler & Dickinson, 2015 for a review).

In order to address these issues, and to test, validate and extend the interview-based accounts of burglary, two strands of research emerged. One approach aimed to utilise the rich contextual

information provided in the environment, by interviewing active offenders in the locations where they committed their crimes. The other took an experimental approach, adding contextual cues through the use of photographs, maps and videos, enabling interviews to be guided by responses to these cues. Despite the use of different methodological approaches, both provided remarkably similar findings in relation to the processes involved in the scoping of a neighbourhood and target selection.

Bennett and Wright (1984) conducted a mixed-methods study with over 300 incarcerated offenders, supplementing interviews with experiments involving free responses to videos and

photographs. Over half of their sample made the decision to offend away from the scene of the crime, in response to a need for money, or as a result of the influence of others. These burglars (termed 'searchers', p. 45) then travelled to an area considered to be suitable for burglary, using their existing knowledge to guide them. After locating an area or neighbourhood, target selection decisions were made based on environmental cues (most importantly, those relating to occupancy and surveillability). In addition to these, a further 17% would use the same environmental cues as the 'searchers' to identify vulnerable properties during their daily routine and would then return later to commit the burglary. From the perspective of expertise, the experienced offender showed awareness of burglary related cues once in a criminogenic environment, but also on an ongoing basis during activities unrelated to the offence (aligning with the 'eternal vigilance' of expert decision-making noted by Bargh, 1994, p.5).

Building on the work of Bennett and Wright (1984), Nee and Taylor conducted a series of experiments which not only enabled a more detailed assessment of the use of environmental cues by experienced burglars, but also importantly included a comparison group of householders (i.e. those without burglary experience; Nee & Taylor, 1988; Taylor & Nee, 2000). Using maps, photographs and slides, the most salient target selection cues were assessed through a process of free recall. Aligning with previous research, three quarters of the sample could be considered to be 'searchers'. The cues used in target selection (e.g. size of property, décor, visible valuable items, access, cover, visibility from the road and neighbouring properties, occupancy, and security) reflected those identified in previous research (Bennett & Wright, 1984; Bernasco & Luykx, 2003; Bernasco & Nieuwbeerta, 2005; Brantingham & Brantingham, 1993; Coupe & Blake, 2006; Garcia-Retamero & Dhami, 2009; Maguire & Bennett, 1982; Snook, Dhami, & Kavanagh, 2011). While cues indicating wealth were the most commonly mentioned, the findings suggested that no single cue is key to target selection. Instead, the cues were evaluated in relation to each other, and the salience in the decision making process was fluid, changing in relation to the specific circumstances (e.g. day vs. night, Nee & Taylor, 2000). Importantly, burglars were able to recognise and assess interacting cues more quickly than householders, a finding that would be anticipated in relation to the speedier processing of relevant information by experts. This assessment of a combination of cues demonstrated the development of detailed and interconnected schema by experienced burglars, enabling accurate

assessment of a changing environment in comparison to those without the benefit of experience (Nee, 2015).

Similarly, Wright, Logie and Decker (1995) demonstrated greater recognition memory for burglary-related cues in 47 active residential burglars compared to 34 matched non-burglars. Logie, Wright and Decker (1992) also identified a hierarchy of expertise in cue recognition, with young burglars showing superior performance to non-burglar offenders, who in turn outperformed police officers, and householders.

An alternative approach to addressing the limitations of interview-based research with

incarcerated offenders involved bringing the research 'into the field'. The ethnographic work of Cromwell, Olsen and Avery (1991) and Wright and Decker (1994) involved interviewing active burglars at the scene of recent burglaries in order to capitalise on the rich cues available in the criminogenic environment. Interestingly, despite the very different methodological approach, the findings showed largely similar processes to those seen in previous (and incarcerated) samples, particularly in relation to the commission of the actual offence (e.g. the assessment of cues in target selection). Cromwell et al.'s (1991) 'journeyman' burglars described searching for and identifying opportunities through the recognition of cues that indicated relative risk and reward. Similarly, Wright and Decker's (1994) sample noted that the awareness of opportunity was a continual process, a constant state of 'half looking' (p.80) as they went about their daily business, further supporting the automatic recognition of cues in these experienced offenders.

Additional evidence for the use of environmental cues and prior learning in offence related decision-making comes from research in the field of environmental criminology (see Brantingham & Brantingham, 2008). Using complex statistical analyses, and linking closely with rational choice theory and routine activities theory, research in this area shows consistency in the location and features of selected targets. Target selection is assisted by familiarity with chosen environments (an offenders 'awareness space', Brantingham & Brantingham, 1993). Decisions are guided by 'cognitive schemas' (comparable to the schemas described above), adding to the rationale for an expertise-based model for understanding offending.

Expertise in Entry to the Property and the Search

Having selected a suitable target, the inevitable next phase of the burglary process is to gain entry to the property. The point of access used by burglars is influenced to some extent by the specific characteristics of the target (i.e. the physical aspects of the surroundings that reduce/increase visibility to doors/windows; accessibility to the rear of the property, and to a lesser extent, security measures employed by the homeowners). Nonetheless, most experienced burglars have a preference for entering through the rear of the property (Nee et al., 2015; Nee & Taylor, 2000). There is some evidence to suggest that increased confidence, as a result of experience, may negate the deterrent effect of some security measures (Clare, 2011). However, studies requiring experienced burglars to complete a 'virtual burglary' (Nee et al., 2015; Nee et al., 2019) showed that all experienced burglars

observed entered through a rear entrance. This provided evidence for superior entry processes (i.e. selecting a less exposed entry point) compared to novices (students, non-burglar offenders and matched non-offenders) who chose to enter through the front door.

Once inside the property, Wright and Decker (1994) identified that the main concern of most of their sample of 105 currently active burglars was to conduct a quick and efficient search, thus enabling them to be in the property for as short a time frame as possible. This was achieved through a focus on the areas likely to provide the greatest yield (usually the master bedroom). In order to further investigate the search patterns used by burglars, Nee and Meenaghan (2006) conducted in-depth interviews with incarcerated offenders regarding the routes taken around the property. They reported

that forty-five out of fifty participants always used a routine search pattern. They commonly starting with the master bedroom, followed by other adult bedrooms, before moving downstairs, evidencing the use of cognitive scripts. Further discussion revealed that the pattern was not only based on previous experience and learning (allowing for a faster and safer search), but also that it was conducted in an almost habitual, unconscious manner. Participants described that while in the property, most of their attention was focussed on listening for returning homeowners, demonstrating the multi-tasking predicted in behaviour guided by expertise. The cognitive demand of the search was reduced sufficiently by the script-like knowledge of the offenders to allow them to focus on the demands of the immediate situation.

While providing a compelling description of a routine, effective and semi-conscious search pattern, the work of Nee and Meenaghan (2006) relied on the self-reports of incarcerated offenders. It was therefore imperative to further test these findings in a more naturalistic setting. Due to the ethical and practical issues of observing offending behaviour 'in real life', Nee and colleagues embarked on a series of research projects designed to develop and test the potential for the use of VR to study offending behaviour. 'Observing' virtual offending offers the potential to (ethically) study decision making that has become automatic and unconscious through expertise (Van Gelder, Nee, Otte, Van Sintemaartensdijk, Demetriou & Van Prooijen, 2017). The immersive nature of the task offers the potential to extend on the reported benefits of using images and objects to help elicit more detailed and varied information in interview (e.g. Chiozzi, 1989), and to increase rapport (Morrow, 1998). It also facilitates the benefit of experimental control and replicability, and importantly for the further study of expertise, the opportunity to study decision-making that may be below the full conscious awareness of the participant (Kahneman, 2011; Nee & Ward, 2015; Van Gelder, Elffers, Reynald & Nagin, 2013), therefore not subject to deliberate retrieval from memory (Van Gelder et al., 2017). Finally, the use of VR reduces the need for interviewer questioning, as participants respond to rich contextual cues presented at the time of interview, reducing the reliance on memory (Van Gelder et al., 2017). An initial pilot study, designed to test the potential of VR for replicating real-life offending behaviour showed very encouraging results (Nee et al., 2015). Both burglars (*n=6*) and students (*n=6*) navigated and 'burgled' a virtual property in the same way as they did a real house (thus

demonstrating that behaviour in a virtual environment accurately reflected real-life behaviour). Accordingly, Nee et al. (2019) piloted a virtual environment with 56 experienced burglars, 50 non burglar offenders and 55 non-offenders. Participants were required to select and burgle one of five properties, and their movements in and around the target property were recorded by the simulation, allowing experimental comparison of behaviour between the three groups. Contrary to their predictions, non-burglars conducted a faster search with higher financial reward. However, they moved about the property in a haphazard and chaotic manner, picking up goods that were unrealistic in terms of size and volume. Burglars, on the other hand, conducted a search that was more comparable to that described by the samples of Nee and Meenaghan (2006) and Wright and Decker (1994), focussing on the most lucrative areas of the property, and identifying smaller and more

valuable goods in a more targeted way. Nee et al. (2019) concluded that their findings provided further support for the automatic, script-like knowledge characteristic of expertise, and for the superior knowledge and skill gained through practice and experience.

Actions After the Burglary

To date, the time period after the burglary (and in crime more generally) has received very little attention. The proposition that expertise is domain specific (Dror, 2011) may indicate that the superior skills and knowledge observed in the actual commission of the crime would not be evident once the offender leaves the property. As reported by Farrington and Welsh (2007), the lifestyle of the acquisitive offender is often chaotic, characterised by low educational achievement, drug use, heavy drinking, gambling and the pursuit of status items, and a lack of commitment to legitimate employment. Such factors do not readily align with the proficiency observed in target selection, entry to the property, and the search of the premises. Despite this, crime statistics indicate that very few burglaries are solved (around 17% in England and Wales; Smith, Taylor & Elkin, 2013), raising the question of whether expertise does play a role in protecting the offender from apprehension.

One of the most frequently cited motivations for burglary is the maintenance of a 'party lifestyle' (e.g. Matza & Sykes, 1961; Shover, 1996; Wright & Decker, 1994), therefore it is perhaps not surprising that the most common action upon leaving the scene of an acquisitive crime is to convert or dispose of the stolen goods as quickly as possible. This was reported by the active carjackers in Topalli, Jacques and Wright's (2015) sample as well as the experienced burglars interviewed by Wright and Decker (1994). The crime takes place in order to maintain that party lifestyle (Shover, 1973), a process that cannot be achieved until the procured items have been turned into cash (or directly to drugs). A quick turn-around has the additional benefit of removing the risk of being caught with incriminating goods (Sutton, 1995). Well established, safe methods of disposal therefore would benefit this process in relation to timescale and level of gain. Early interviews with persistent thieves (Shover, 1973) drew attention to the potentially 'novice' approach of exchanging stolen goods directly for drugs, a relatively low profit method which contrasted with the actions of more 'expert' burglars. Clare (2011), however, looked at expertise within burglar groups, comparing

53 expert and 53 novice incarcerated burglars (assessing expertise through classification of number and frequency of burglaries, income generated, number of charges, and duration of 'career'). Clare (2011) found that more expertise was associated with a wider range of disposal options, including not only drug dealers, but also pawn shops, jewellers and 'fences' (professional buyers). Instead of moving from the use of less sophisticated to more sophisticated methods with experience, the offenders network expanded, incorporating a greater number of sales options with various levels of refinement. More experienced burglars did, however, tend to avoid the arguably riskier route of selling to friends and family. A more skilled approach to the disposal of goods would intuitively be beneficial to the offender, both in terms of avoiding apprehension and in maximising the profit from acquisitive crime. In reality, the practicality of separating this process from the more chaotic aspects of the offenders' lifestyle may be more problematic than for the actual burglary, with an overlap

between buyers (whether it be drug dealers, acquaintances or local shops) and the offenders' day to day life.

On the occasions where the offender is apprehended, this is usually the result of being 'grassed' upon or drawing the attention of the police after the event (Bennett & Wright, 1984), both of which indicate risky (inexpert) decision-making in relation to who is aware of their actions, and what these actions entail. Impacting on behaviour after the burglary are factors such as intoxication (drugs and/or alcohol), but also the role of friends and acquaintances in the continuation of burglary involvement. Successful burglary has the potential to increase the social status of the offender, encouraging the burglar to share (or potentially, boast) about his or her actions (Shover, 1973). Maguire and Bennett (1982) suggested that such actions may be useful in differentiating between novice and more experienced offenders. It is also worth considering, though, that expertise is often associated with an increase in confidence in an individuals' own abilities (Clare, 2011), a tendency that may be supported by the offenders' experience of completing a large number of burglaries without being caught.

A key aim of this thesis is to consider the evidence for actions that may be guided by expertise after leaving the scene of the crime. It looks to build on the observations of Shover (1973), Wright and Decker (1994) and Clare (2011) to establish whether experience influences the methods used to convert goods to cash (or drugs), and whether engaging in a range of risky behaviours declines as experience accrues. This will be considered in the light of the key motivations for burglary (e.g. expressive vs. instrumental) and the influences on behaviour (e.g. the role of the peer group, and the addicted use of drugs) in order to add depth to the theory of dysfunctional expertise. In turn, this may have implications for crime prevention strategies (targeting behaviour least guided by developed skills) and intervention (considering the extent to which behaviour after the event is guided by unconscious and automatic cognitive scripts).

Outline of the Thesis

The overarching purpose of the current thesis was to use a new methodological approach to complete the picture of the entire burglary event, from the initial decision to offend, through to the time period following the burglary. Also, to assess the role of expertise in the decision-making of burglars of different ages. Accordingly, the research consisted of four key aims. The first was to provide more evidence for the new methodological paradigm involving the use of VR in understanding offending behaviour, as an ethical and replicable experimental approach to research. This aim was addressed in Study 1. The second aim was to develop the dysfunctional expertise model by addressing gaps in previous research on the role that expertise plays in the development of the criminal career of residential burglars, namely the decision to become involved in burglary, and the decision to offend on a specific occasion. Accordingly, Study 2 examined the extent to which the skilled processes involved in the commission of the offence extend beyond the actual burglary event, to influence behaviours and decision-making in the lead up to the burglary. The third aim looked to

add to existing knowledge of the role of expertise in offending behaviour by assessing its impact on the behaviour and decision-making of burglars of different ages. In this way, the impact of increasing skill through ongoing experience could be assessed alongside other key age-related factors (i.e. motivations to offend and the influence of others). This was achieved in Study 3 through the comparison of skill in the undertaking of a 'virtual' burglary by younger and older burglars. The final aim was to examine the largely neglected time period after the offence. Accordingly, Study 4 focussed on actions and decisions after the crime had been committed, in an attempt to complete the picture of the processes involved in residential burglary.

In **Study 1 (Chapter 2)**, qualitative data collected by the author as part of the 'Virtual Burglary Project'[1]and not analysed elsewhere, were examined to assess the benefits of the use of VR in eliciting detailed and offender-focussed perspectives on the commission of the offence. As a result, the 'Virtual Enactment Method' (VEM) was developed and tested, and the data gathered was used to inform interview schedules for the subsequent studies. The author of this thesis was the lead researcher and author in the article published summarising Study 1 (Meenaghan, Nee, Van Gelder, Otte & Vernham, 2018), and from this came the inspiration for the remainder of the thesis. The enhanced interview data obtained as part of Study 1 indicated to the author that the VEM could be a valuable tool in encouraging participants to discuss in considerable depth not only the processes involved in a burglary, but also the much less researched time periods surrounding the actual burglary. This had the potential to uncover details about the associated decision-chains, with implications for the theory of dysfunctional expertise, and for guiding interventions with offenders. Data for the

[1] The Virtual Burglary Project is an ongoing collaboration between the University of Portsmouth, the Netherlands Institute for the study of Crime and Law Enforcement (NSCR) and VU University Amsterdam. It aims to use simulated environments to understand offending behavior, cognition and emotion in burglars. The current thesis fits within this project, and was developed from observations made regarding the potential for positive impact on interview data collected as part of pilot research testing the use of VR in offender research.

following three studies were collected simultaneously, largely due to the practical difficulties associated with gaining access to and collecting data in UK prisons. However, in practice, data collection about all aspects of the burglary event in a single episode for each participant proved to have real advantages. Qualitative data collection after the completion of the virtual burglary (during which cognitive scripts associated with undertaking a burglary were activated) enriched participant responses to the subsequent semi-structured interviews, thus increasing the level and accuracy of reporting of decisions and emotions before (Study 2) and after (Study 4) the burglary. The author of the current thesis collected and analysed all data for studies 2, 3 and 4, and was lead author for the resulting papers, one of which has been published (Study 2, Meenaghan, Nee, Van Gelder, Vernham & Otte, 2020), and two of which are in preparation (Studies 3 and 4).

Study 2 (Chapter 3) focussed on the very early part of the decision chain (i.e. the initial decision to undertake a particular offence), a topic that has previously been neglected in the research literature. Alongside discussion of the proximal decision to offend, burglars also reflected on more

distal decisions to offend, and how they choose burglary over other (legal or otherwise) paths. Substantial research regarding the process of target selection suggests that expertise is likely to affect these initial, proximal decisions (Nee, 2015), however the point in time that behaviour begins to be guided by expertise is less clear. Therefore, this second study used qualitative interview data with younger and older experienced burglars to uncover details of the cognitive processes used in the very early stages of burglary involvement (i.e. encouraging participation in the first, and subsequent burglaries), and also in the decision to offend on a specific occasion.

Study 3 (Chapter 4) aimed to extend recent research demonstrating expertise in the completion of a virtual burglary in experienced burglars compared to non-burglars, by investigating expertise *within* burglar groups (i.e. younger vs. older burglars). This was to assess whether expertise continues to develop as experience accrues, in line with Clare's (2011) finding that experienced burglars demonstrated superior perceptual and procedural knowledge compared to less experienced burglars. All participants in the current sample had taken part in sufficient burglaries to have had the opportunity to develop some level of skill. The focus of the study, therefore, was to assess the impact of expertise (in relation to other key factors) as the offenders moved from adolescence into adulthood. In this way, the research investigated the impact of developing skill on decision-making across the criminal career.

Study 4 (Chapter 5) aimed to complete the picture of the burglary event by analysing interview data relating to the (again rarely studied) time period after the burglary. The rationale for this portion of the research was to assess whether expertise is confined to actions during the offence, or whether experienced burglars exhibit expert behaviour in a) the conversion of goods to funds; and b) their actions in the hours and days after the completion of an offence.

Lastly, the final chapter **(Chapter 6)** presents a summary of the findings, considering implications for theory, crime prevention and interventions with offenders. After noting and

discussing the limitations of the research comprising this thesis, suggestions for future research on expertise in offending and the use of VR to study offending behaviour are presented.

Chapter 2

Getting Closer to the Action: Using the Virtual Enactment Method to Understand Burglary

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Abstract

This paper describes a new method, the Virtual Enactment Method (VEM), and demonstrates its potential for enhancing offender recall and motivation to disclose information. The VEM requires that burglars reflect on their experience while committing a crime in a simulated virtual environment. 61 incarcerated burglars 'thought aloud' whilst undertaking a virtual burglary. Following the 'virtual' burglary, emerging themes were expanded upon in an interview. The findings show that the simulated environment effectively reinstates the criminogenic event, increases engagement, enhances recall, and encourages participants to talk more openly about their experiences, skills and knowledge. Implications for offender interventions and crime prevention are discussed.

Getting Closer to the Action: Using the Virtual Enactment Method to Understand Burglary

"It was just like being back on the road"

(Incarcerated burglar reflecting on his experience undertaking a 'virtual' burglary).

This study focusses on residential burglary in order to demonstrate how the use of a simulated environment can allow for 'observing' and recording offending behaviour as it happens, whilst also providing researchers with a means to elicit valuable offender insights into criminal behaviour, cognitions and emotions. We describe the use of a new method, which we call the 'Virtual Enactment Method' (VEM), that involves combining visual methods (i.e. virtual reality, VR), 'think aloud' techniques, and interview methods, to accurately record offender cognition, emotion and navigation, and to observe offending behaviour in an ethical manner.

Below, we will provide a brief overview of what is known about burglary behaviour and cognitions from previous research; discuss the methods we used in this research; outline briefly the quantitative findings of the study and describe in greater depth its qualitative aspects; and identify the value of this new visual methodology, the Virtual Enactment Method (VEM), in increasing our knowledge of offending behaviour.

Decision-Making in Residential Burglars

Research into residential burglary over the past few decades has provided detailed knowledge of the types of properties targeted (Nee & Meenaghan, 2006; Nee & Taylor, 2000; Shover, 1973; Waller & Okihiro, 1978), the types of goods stolen (Bureau of Justice Statistics, 2013; Clare, 2011; Crime Survey for England and Wales, 2013), target hardening and community crime prevention (Bernasco & Nieuwbeerta, 2005; Bennett & Wright, 1984; Cromwell, Olson & Avery, 1991), and more recently, decision-making and expertise (Garcia-Retamero & Dhami, 2009; Nee & Meenaghan, 2006; Nee, 2015; Nee, White, Woolford, Pascu, Barker & Wainwright, 2015; Nee, Van Gelder, Otte, Vernham & Meenaghan, 2019). Early work with experienced burglars demonstrated that burglary is rarely an impulsive, indiscriminate act (e.g. Shover, 1973), and that an understanding of environmental factors and the motivations and cognitions of experienced burglars is important to build up a full picture of the burglary event (Nee, 2015). It is, for example, common for burglars to make the initial decision to commit the burglary away from the scene of the crime, some time before target choice (Nee, 2015). Shover (1972, p. 542) interviewed experienced burglars, and identified the 'good burglar' – one who specialises in burglary, and who demonstrates technical skill and success. These 'good burglars' described driving for sometimes hundreds of miles on scouting-trips, looking for areas and properties similar to those they had targeted in the past. Subsequent research suggests that scouting for suitable targets more commonly occurs in neighbourhoods closer to home, as the offenders go about their daily routines (see, for example, Wright & Decker, 1994). Bennett and Wright (1984) also found that around half of their sample of experienced burglars used their previous experience to travel to an area believed to be attractive for burglary and made their target choice at the

scene of the crime using environmental cues indicating property vulnerability. They called these burglars 'searchers'. In addition to these, a further 17% would use the same environmental cues as the 'searchers' to identify vulnerable properties during their daily routine and would then return later to commit the burglary. Nee and Taylor conducted three studies looking further into the skills and knowledge possessed by burglars. They concluded that three quarters of their sample were 'searchers', making the decision to burgle away from the scene of the crime, with smaller numbers demonstrating either a less experienced, opportunistic approach, or a more skilled, planned approach (Nee & Taylor, 1988; 2000; Taylor & Nee, 1988), a finding also reported by Nee and Meenaghan (2006).

In contrast to the evidence for target selection in areas local and known to the offender, many burglars claim to avoid committing crimes on their own doorstep, instead choosing more lucrative properties outside their own immediate neighbourhood. These assertions need to be considered with caution, however, as crime statistics show high levels of burglary among social housing (Crime Survey for England and Wales, 2013), perhaps due to the immediacy of need for reward or access to transportation. In addition, the literature on expertise and environmental criminology highlights the importance of familiarity in building rich schemas upon which to base burglary decisions, increasing the attractiveness of houses within the burglar's locale or 'awareness space' (Brantingham & Brantingham, 1991; 2004).

Burglar Expertise

More recent work utilising knowledge from cognitive psychology demonstrates how instantaneous recognition of cues in the environment results in effective and relatively automatic decision-making (Nee, 2015). As such, Nee and Meenaghan (2006) note that experienced burglars can be compared in their decision-making and cognitive processes to 'experts' in other fields (e.g. chess, Chase & Simon, 1973; or music, Lehmann & Gruber, 2006). Nee and Ward (2015) brought together research in criminal expertise to develop their model of 'dysfunctional expertise' to understand offender decision-making at the scene of the crime. This model proposes four stages of decision making, (1) automatic and unintentional appraisal of the environment; (2) superior, automatic recognition of offence related cues; (3) as a result of practice, the activation of complex cognitive schema, which guide (4) rapid responses to environmental cues, through the playing out of behavioural scripts. Nee and Taylor (1988; 2000) showed how, in comparison to 'novice' householders (i.e. those with no burglary experience), burglars use fewer, more systematic routes to identify access around potential targets, and process cues indicating wealth and access more quickly. Characteristics of a property assessed in target selection (importantly, relative to others in the locale) include size, decor, visible items of value, vehicles on the driveway, access, cover (e.g. vegetation), fences, visibility from neighbouring properties, occupancy, doors and windows that are harder to access, and level of security (Bennett & Wright, 1984; Bernasco & Luykx, 2003; Bernasco & Nieuwbeerta, 2005; Brantingham & Brantingham, 1975; Coupe & Blake, 2006; Garcia-Retamero &

Dhami, 2009; Maguire & Bennett, 1982; Snook, Dhami & Kavanagh, 2011). A combination of such cues is processed significantly more quickly than novice comparison groups, and the importance of each cue may change over time, for example in daylight versus night time (Nee & Taylor, 2000). Once inside the property, the search is also characterised by a reliance on cognitive scripts based on past experiences. Experienced burglars take systematic routes based on previous burglaries, spending more time in high value areas, identifying more high value items, allowing for an efficient, fast and lucrative search, maximising reward and minimising risk (Clare, 2011; Nee & Meenaghan, 2006; Nee et al., 2015; Wright & Decker, 1994).

These findings provide support for the idea that the burglar is an expert in his or her field, and for Nee and Ward's (2015) model of dysfunctional expertise to explain the decision-making of the offender in and around the scene of the crime. However, much of the research to date has important limitations. Ethical and logistical issues make it difficult to observe actual offending behaviour, and as such the earlier offender-based work relied on interview methodologies. Whilst valuable, interview methods rely on the interviewees' memory and reporting of the event, and inaccuracies may occur intentionally (e.g. exaggerating or minimising actions; Elffers, 2010; Kearns & Fincham, 2005) or unintentionally (e.g. forgetting, reversing the sequence of events, time distortion; Bradburn, Rips & Shevell, 1987; Nisbett & Wilson, 1977). Van Gelder, Nee, Otte, Van Sintemaartensdijk, Demetriou, and Van Prooijen (2017) note that even when research is conducted 'in the field' (e.g. at the scene of a recent burglary) much of the decision-making that occurs during the actual commission of the crime happens automatically and unconsciously. It is therefore not subject to deliberate retrieval from memory. They propose the use of VR as a means to not only enable the study of offending behaviour as it unfolds, but also allow for the greater understanding of the criminal decision-making process as a result of the increased level of realism and the potential for the researcher to exert control over the research environment. In addition, given the importance of the complex processing of a wide range of changing environmental cues in decision-making, the possibility of recreating the burglary event should increase our understanding of behaviour at the scene of the crime in important ways. In the current investigation, we focus on residential burglary, to demonstrate the potential of the VEM in furthering our understanding of decision-making and offender expertise in a range of criminal activities.

The Use of Visual Methods to Improve Accuracy and Recall

The use of 'photo elicitation', that is the addition of photographs to a research interview, has been common in sociological research, and is considered to not only provide more information, but also different information to that gained through interviews alone (Harper, 2002). The use of elicitation techniques are particularly useful in encouraging people to share details of experiences that are hard to talk about (for example, where social, cultural or psychological barriers may exist, or in the investigation of 'automatic', unconscious behaviours that participants find hard to describe through lack of awareness; Barton, 2015). These barriers may apply in discussions with offenders

when asked to describe unethical offending behaviour that has become automatic through the

development of 'dysfunctional' expertise (Nee & Ward, 2015). Early proponents of the use of photographic stimuli noted that 'photographs elicited longer and more comprehensive interviews, but at the same time helped subjects overcome the fatigue and repetition of conventional interviews' (Collier, 1957, p.858). Significant objects (keepsakes, trophies, etc.) have also been shown to trigger events, and help people place memories of events into historical context (El Guindi, 2000). Ethnographic researchers (see De Leon & Cohen, 2005) at times make use of 'walking probes', where participants and researchers visit a particular location and discuss the significance of the environment and associated experiences. According to De Leon and Cohen (2005), this technique is successful in eliciting detailed information regarding history and personal information.

Chiozzi (1989) and El Guindi (1998) reported anecdotal evidence of increased disclosure of detail in interviews after incorporating still visual images, and in addition, increased involvement in and enthusiasm for the interview process. Participants no longer act as 'subjects', but take on a more active role, exerting greater agency in the research (Harper, 2002). Similarly, Collier and Collier (1986) and Morrow (1998) noted the potential of photographic stimuli in serving as icebreakers, speeding up the process of building rapport between the participant and researcher. We think that the use of visual stimuli has important implications for the study of offending behaviour, as participants may be reluctant to share details of their unethical behaviour with researchers, particularly in a criminal justice setting such as a prison.

Integrating Concurrent and Retrospective Reporting Through Virtual Reality We propose that the use of VR can further enhance the elicitation effects discussed above, specifically increasing the amount and detail of information provided by participants and increasing rapport between researcher and participant. There is also the potential for greater impact than previous methods, such as photo elicitation, as the use of VR can effectively reinstate the criminogenic event. That is, the potential of still images to increase engagement can be enhanced by immersing participants into a virtual criminogenic environment, which enables researchers not only to 'observe' potential offending behaviour as it happens, but also improve the detail and accuracy of verbal reporting as the 'crime' unfolds. This allows for the use of some of the techniques of protocol analysis (Ericsson & Simon, 1993) to uncover thought and decision processes during the actual completion of a 'burglary' that have become automatic through the development of expertise. The strength of the VEM described below lies in the fact that it enables both concurrent (think aloud) and retrospective (interview) reporting, allowing for a detailed examination of observed and described behaviour. This method may also address the problem of reduced accuracy of retrospective reporting due to the time lag between an event and the reporting about it that is inherent in interview research. Allowing participants to think aloud while performing the behaviour of interest (e.g. a burglary), and interviewing them about utterances immediately afterwards, should result in responses that relate to the recent memory of this 'offence'. Provided the simulated event is similar enough to its

real-life counterpart to produce accurate behaviour and decision-making, this will reduce the tendency for participants to make judgements in their answers based on speculation and reliance on long-term

memory (Ericsson & Simon, 1993; Nisbett & Wilson, 1977).

In this article we argue that recent technological advances can increase the benefits observed through the use of photo elicitation and similar visual techniques, while overcoming their most important limitations. By using a realistic virtual environment that serves as a substitute for the real world, participants are able to interact with the environment and to assess and respond to cues as they encounter them in the virtual neighbourhood. In other words, this allows researchers to observe crime *as it unfolds*, yet in an ethical manner (Nee, 2010).

The Use of the Virtual Enactment Method – Benefits Over Less Immersive Techniques The current research builds on recent work of Nee et al. (2015), in which participants (six 'expert' ex-burglars and six 'novice' students) undertook a 'mock' burglary in both a real house and in a simulated house on a laptop. Even though the sample size was small, the simulation was successful in (a) identifying expertise in the behaviour of burglars compared to novices, and (b) demonstrating that almost identical behaviour was observed in the burglary of the real house and the simulated property, indicating that the behaviour of participants in a simulated environment may indeed be comparable to that in real life. This comparability of behaviour in real and virtual environments has also been demonstrated in other settings, such as Slater et al.'s (2006) re-creation of Milgram's (1963) obedience study in which participants reacted in a similar way behaviourally and physiologically when administering virtual electric shocks to an avatar as did Milgram's 'real-life' participants – their reactions showed they were treating the virtual person as if they were real. Slater et al. (2013) also successfully recreated Darley and Latane's (1968) bystander effect experiment, by creating a confrontation in a virtual bar, demonstrating that as in real life, participants intervened more frequently when the victim was part of their in-group (a supporter of the same football team, in this case) than for out-group members. This again demonstrated the potential of VR to investigate ethically problematic situations and extended the benefits of those found using photo elicitation techniques.

The VEM is the next step in the development of the visual elicitation techniques described previously and shows how the benefits of their use can be advanced using a rich, interactive environment. The overall aim of the 'Virtual Burglary Project'[2]is to demonstrate the potential of VR to study burglary and other crimes. By interacting with and responding to cues in the environment, offender decision-making can be more accurately and reliably 'observed' and recorded. For example, routes taken inside and around the property, time spent in specific areas of the house, and the exact items stolen (including their value and weight) can be logged and analysed alongside the free

[2] The Virtual Burglary Project is an ongoing collaboration between the University of Portsmouth, the Netherlands Institute for the study of Crime and Law Enforcement (NSCR), and VU University Amsterdam.

responses of offenders as they navigate the environment. This detail allows for an intricate understanding of offender decision-making processes. The often automatic nature of the decision making process means that offenders may not be fully aware of their offence related behaviour, and so

verbal reports using interview alone may not be fully or entirely accurate.

The use of this immersive technique has the benefits of (i) reducing the influence of researcher questioning, as participants are required to freely respond to contextual cues, and (ii) eliciting more genuine and valid responses, as participants are immersed in the environment rather than relying on their imagination (Van Gelder et al., 2017). It also addresses one of the main challenges of criminology, by allowing us to get far closer to observing real-world behaviour in an ethical manner, whilst also increasing the motivation of participants to share their experiences, skills and motivations for committing crime and/or burglary (Van Gelder, Otte & Luciano, 2014). Importantly, as reported by Friedrich (2016), VR has the potential to enable effective visualization of an event, resulting in increased emotional engagement.

The Current Study

The aims of the current research are to demonstrate that VR can be used to observe and record offending behaviour in an ethical manner, and also to enhance offender recall and motivation to disclose offence related information. The research describes the development and testing of the novel Virtual Enactment Method (VEM) in order to address two research questions. Firstly, to what extent is VR a useful tool in observing 'offending' behaviour and decision-making? Secondly, can the use of VR be combined with think-aloud and interview procedures to elicit valuable offender insights into offence related cognition, behaviour and emotion?

Method

Participants

Participants in this study were 61 male incarcerated offenders (age range 20-56 years, M_{age} =

37.64 years, *SD* = 8.59) with high levels of burglary experience. The participants were serving prison sentences for various offences (not just burglary). Four UK prisons were used to recruit this sample. Participants were recruited through leafletting prison wings, self-referral, and through the recommendations of other prisoners and prison officers.[3] Most described their ethnicity as white British or Irish (*n*=45, 73%), white European (*n*=1, 2%), and the remainder (*n*=15, 25%) were black British, mixed British or black Caribbean. Involvement in burglary began at an early age for most participants – half were under 16 years old at the time of their first offence.

Previous conviction data and self-reported offending history revealed involvement in burglary over a long period. Forty-five participants (74%) described involvement as either: 'over their lifetime'; for more than 10 years; or in terms of multiple burglaries per day or week for an extended period, and they were often involved in other acquisitive crimes alongside burglary, most usually other theft related offences such as car theft, robbery and commercial burglary. Drug offences were also common, with many participants directly relating their drug use to their involvement in burglary.

Materials

The Simulated Neighbourhood

The virtual burglary simulation was carefully devised using creative technologists and extensive knowledge of residential burglary in members of the research team, to replicate what would be considered a typical residential neighbourhood and property type for the majority of experienced burglars to target. From the earlier literature described in the introduction of this chapter, we know that a combination of environmental cues interact to influence target selection, and so, with these factors in mind, a residential neighbourhood was designed consisting of five terraced houses each with external aspects making them more or less attractive to the experienced burglar (access and surveillance cues, such as side or rear access, vegetational cover, proximity and visibility of neighbouring houses; security cues such as alarm boxes, blinds open or partially shut; and reward cues such as a bike outside the house, a car parked outside; see Figure 1).

Upon 'entering' the simulation, the participant would find themselves standing opposite the row of houses that could be targeted. They could freely 'walk' (using a game controller) around in the neighbourhood, get up close to the front of the houses, look in the windows, and go down side streets to reach the rear of the property. The back gardens could be accessed via an alleyway, and were fenced off, with gates allowing access to the properties. This provided the choice of more secluded

[3] As we were also recruiting a comparison group of prisoners without burglary experience, we ran 116 participants in total and the 61 we report on here were those with high levels of burglary experience. We also included a non-offender control group (community-based), and these two control groups were matched on age, ethnicity and socio-economic background.

entry points (most experienced burglars report a preference for entering the property at the rear if possible; Nee & Taylor, 2000; Nee et al., 2015).

Figure 1

The Virtual Neighbourhood

Once a property had been selected, participants could enter through the front door, the back door, or an upstairs window (reached by climbing the drainpipe). The interior of the property was designed to reflect a typical house in terms of layout and content (the layout and lootable items in all the accessible properties was identical to allow for a comparison of routes, time taken in the property, and items stolen regardless of which property they selected; see Figure 2). The ground floor consisted of a living room, dining room, kitchen and bathroom, with a hallway and staircase leading to the first floor. This was made up of the master bedroom (including the open window which could be accessed from the back garden), a children's bedroom, a study and the main bathroom. There was also an airing cupboard, and stairs leading to the second floor, where the teenage bedroom and games room were located. All rooms contained items that could be stolen, and furniture such as cupboards and drawers that could be opened and 'searched'. Previous research suggests that the most popular items targeted are money, jewellery and electrical goods – small items that can easily be transported and fenced (Clare, 2011). We included the larger electrical items to increase the realism of the property, to create a discussion point as to why they may or may not have stolen such items, to encourage discourse on methods of fencing and disposal, and to compare the approach of the experienced burglars with that of the control groups.

Figure 2

Interior (Living Room) with Lootable Items

The virtual neighbourhood was presented on a laptop computer and could be navigated using a gamepad or a mouse, depending on the preference of the participant. To increase the level of immersiveness of the simulation, participants wore headphones through which naturalistic environmental sounds could be heard (birds singing, cars driving past, airplanes overhead), as well as sounds relating to user actions (doors opening). Participants pressed a button on the gamepad to open doors, cupboards and drawers, and to pick up items. They also had the option to drop items picked up in error, and to crouch. A digital voice recorder was used throughout the procedure, to record participants' verbalisations during the completion of the simulation, and their responses in the subsequent interview.

Procedure

Data collection took place in a private office or room on the prison wing or education department, with just the researcher and participant present. After fully briefing potential participants, acquiring consent, and completing a brief demographic questionnaire, participants were instructed on how to navigate the virtual environment, and were asked to complete the 'burglary' as if it were a real-life experience. They were encouraged to 'think aloud' if they wished while completing the task, and as well as audio-recording their verbalisations, the researcher noted down issues to be further explored in the subsequent semi-structured interview. The original aim of this post-simulation interview was to

ascertain whether or not the participant should be allocated to the 'experienced burglar' group or the control group. That is, we wanted to explore their level of experience in burglary and other crimes (though in effect, this became obvious during the 'mock burglary'). It also aimed to explore in a semi structured way the participants' experience of undertaking the mock burglary, including their well

being afterwards, their views on whether the VR neighbourhood could be used as a research tool (which speaks to the validity of the method), and what they thought the strengths and weaknesses of the simulation were. However, the interview was sufficiently open-ended to allow for the investigation of additional themes identified by the burglars as they 'thought aloud' whilst navigating the virtual environment. The entire process, from briefing to debriefing, took between 30 minutes and an hour, depending on the length of time taken to complete the burglary, and the depth of the subsequent interview.

During the process of data collection, it quickly became apparent that the undertaking of the mock burglary served to build rapport between the researcher and the participants. It made participants notably more willing to talk about their skills, experiences and knowledge as they became more immersed and engaged in the task, as also reported in the photo elicitation studies (Barton, 2015; Collier, 1957; El Guindi, 2000; Harper, 2002) described above. We were encouraged to find that benefits found in the use of evocative images and salient objects in terms of increased engagement of participants could be replicated by the use of our method, despite the fact that computer generated images rather than personal images were used. Participants who were initially suspicious and reluctant to talk noticeably relaxed and unexpectedly mentioned a wide variety of issues as they 'burgled' the house, which were then explored in the subsequent interview.

Analysis of the data followed a thematic approach, a qualitative method for identifying, analysing and reporting patterns (themes) in data (Braun & Clarke, 2006). Thematic analysis is a flexible and, in the current research, inductive method, following the procedure recommended by Braun and Clarke (2006). NVivo software was used to facilitate coding. The analysis consisted of six steps. First, the interview data were transcribed, read and re-read to ensure familiarity with the content. Second, codes (features of the data that appeared interesting to the researcher) were generated. Third, these codes were reviewed and grouped together in themes. Fourth, themes were then reviewed and refined – some were discarded, and others were further grouped together. Fifth, the themes were defined and named. Finally, specific data items were selected to illustrate the themes and relate them to previous literature.

Some of those themes emerged in response to lootable items that had been placed around the property, prompting explanations from participants as to why they chose to steal (or leave) them. Examples include car keys and certain items of technological equipment (for example, phones and tablets likely to have tracker technology). Participants also explained their behaviour and decision making as they navigated the environment, allowing the subsequent discussion of motivations and

factors influencing their behaviour. We grouped the themes that emerged below into issues associated with:

- Approaches to undertaking the burglary (including target selection, levels of forensic awareness, recent changes in residential burglary and abandoning a burglary); •

Substance misuse and how it impacted the development of the criminal career, and its relationship with offending expertise;

- Behaviour and emotions of experienced burglars in the time immediately after the commission of a residential burglary; and
- The experience of undertaking the 'mock burglary' (including improvements to the simulation to make it more realistic, more relevant and more effective as a proxy for real life burglary behaviour).

Results and Discussion

Upon entering the virtual environment, most participants first engaged in some level of 'scoping'. This usually involved 'walking' along the pavement in front of the properties and looking in the front windows to ascertain which property had the most potential gain. As they did this, many

participants noted cues to wealth and security, for example, highlighting the presence of an expensive bicycle outside one property, or an alarm box on another. The front window of each property was designed to look slightly different (blinds open/shut/partially open, a different item placed in each window. These differences were visible to the participant while still on the 'street' outside the property). Once up close, it was possible to see the interior layout and content of the property through the window (similarly, through the rear patio doors). As participants walked around the neighbourhood, many participants, without prompting, explained their choice of property and access point. Such vocalisations continued throughout the commission of the 'burglary' and allowed the researchers to identify indicators of expertise that could be discussed further in interview. As noted previously, even participants who showed initial reluctance, and were not forthcoming with information at the start of the experimental session, were surprisingly and increasingly vocal as they became engrossed in the burglary task. Participants often provided an explanation for the decisions being made as they navigated the property, which added to the researchers' understanding of their behaviour in and around the property.

Once participants had performed some level of investigation of the neighbourhood, they selected a property to 'break into'. Doors could be opened using the game pad, and participants were then free to explore the house, and 'steal' as many items as they wished (participants were asked to treat the burglary as if it were real life, and to spend the amount of time they usually would in a real burglary). To add to the level of realism, the more items picked up (and the heavier and bulkier the items selected), the slower the participants would become in the virtual environment. Participants had the option to place looted objects in a 'dropzone' by the front door, and to continue the burglary at a normal speed. Participants were told that items in the dropzone would 'go with them' when they left.

Approaches to Undertaking the Burglary

Target Selection

In addition to commenting on the type, affluence and vulnerability of the properties as they walked around the neighbourhood, participants often indicated the likelihood that they themselves would target such houses as those presented in the simulation. As burglars scoped the virtual neighbourhood, they commented on how far they tended to travel to find targets in real life:

> 'Personally, I would go out of my own area, then you don't have to hide all the time, get on with your daily life'. (Participant 049)

> 'Well you're not as well known in other areas. Because they get a profile on you, a police profile. If you're a known burglar and you go to the same area, they're bound to catch up with you, aren't they?' (Participant 051).

> 'If you do it in your local area, if you get caught everyone is going to know it's you, your

family and that, you've got to walk round the street and everything.' (Participant 087).

In line with decades of previous research (e.g. Bennett & Wright, 1984; Nee & Taylor, 2000), very few participants mentioned immediately capitalising on a lucrative opportunity, or on the other extreme, planning burglaries to any great degree in their real-life burglary activities. This information was often volunteered by participants as they attempted to gain access to the property, which could be achieved by simply pressing 'x' on the gamepad. The unrealistic nature of this prompted many to disclose some of their actions before embarking on a burglary (e.g. tools carried, occupancy checks, methods of entering a property). This could then be followed up in the interview. However, extending the simulation to include the 'planning' phase in future simulations may be beneficial in increasing knowledge of decisions made prior to the actual burglary. A small number did mention a new tool in planning burglaries, that of social media:

> 'Facebook too - blasting out whether someone's home or not, to making dummy calls, being able to find out people's details using these social sites to see if they're home, see when they are, you can do a whole profile on someone. And then know whether you want to burgle them, usually what you've posted makes you interested in you wanting to burgle them in the first place' (Participant 096).

Social media is an area worthy of further research, particularly with a younger audience. The use of social media in residential burglary has largely, to date, been reported by the media, the police, security companies, and as a concern of ex-burglars, rather than as a result of research efforts (e.g., Smith, 2013; Stirling, 2011). There are a number of social media sites that may allow for the identification of empty properties (e.g. householders posting that they are on holiday), or lucrative items (e.g. web-based sales sites). Friedland and Sommer (2010) provide a review of not only the potential avenues for offenders to utilise, but also demonstrate the ease and accuracy by which targets can be pinpointed using location-based services on mobile devices, even when the users of such sites believe they are taking sensible precautions to protect themselves. Other web-based technologies, such as Google Street Map and Street View may allow burglars to engage in initial planning without even visiting the site, reducing travel costs, and the risks involved in 'scoping'. Although this may not reflect the current situation (e.g. presence of cars, curtains drawn or open), it provides a useful starting

point, and may actually increase the awareness space (Brantingham & Brantingham, 1991; 2004) and number of potential targets available to residential burglars (Vandeviver, 2014). The most common, spontaneously cited cues for target selection were those relating to surveillance (the possibility of being seen while entering or being inside the property) and, as expected, more burglars entered the end of terrace houses (*n*=42, 69%) and at the rear (*n*= 29, 48%):

‘I would look for the house that was not looked on to by other houses, corner houses, ones with back alleys’ (Participant 094).

‘More tree surrounded type places, foliage if you like, things to block off direct views to the house’ (Participant 075).

‘I'd check the first three houses, just so long as there's no people in the first three houses I'll break the window ‘coz I know no one can hear it for three houses along’ (Participant 001)

‘No, I'd always pick an end house wouldn't pick one in the middle, if it was a terrace it'd always be an end one, most time I'd go in the back... I'd never do one in the middle of a terraced...’ (Participant 083).

‘Depending on where you are in the neighbourhood and depending on which one's the easiest route and where you're less likely to be seen. I'd say that probably in a neighbourhood like that you're more likely to go in the back door’ (Participant 094).

Relative reward (in comparison to other houses on the street) was the next most frequently mentioned cue to target selection (*n*=11, 18%), and as the experienced burglars walked around the environment, they pointed out cues as to the affluence of the property compared to the other houses on the street. This commentary provided a useful insight into the interaction of environmental cues in target selection, and could be used in future research to contribute further to our understanding of dysfunctional expertise:

‘The reason I went for that one is that it had a nice bike out the front and they looked like they had more money than the person with the old granny bike down the end of the street. It's all about appearances see.’ (Participant 110)

‘You've got to look up see what you can see in the house first, especially if you've got five houses that are empty, you got your pick there see, if anything you've got to jump over the garden, quickly mooch up and move on to the next one, that's generally how it works, what

you do is you walk round once, see what you can see, [I] walked down the alleyway and you couldn't really see a lot through the back so I had to see what I could see through the front windows, from the outside there was a nicer bike there, outside this, there was a couple of cars but, something like that it's promoting the house, it makes you want to go in and have a look. They’ve already got a big sign outside the house 'come and rob me'.’ (Participant 110)

Items Stolen

Once the chosen house was entered, burglars stole fewer items with lower weight and volume, but of higher value compared to control groups (who went for bulky items). Jewellery, money and light valuables were among the most popular items to steal, 17 (28%) participants specifically stated only targeting such items:

> 'I go for light things, anything I can carry and walk out with. I go for jewellery, gold, I wouldn't take no TV'. (Participant 057)

This demonstrated the superior recognition for high value, easily transportable and convertible goods by experienced burglars – a clear example of 'dysfunctional expertise' (Nee & Ward, 2015):

> 'All Apple items are going to be popular, that's why I just took the Apple... jewellery, preferably the smaller things, like diamonds, jewellery, if you're a house burglar that's what you're going to be looking for, anything that's Apple is going to sell'. (Participant 062).

Some proficient burglars (*n*=3, 5%), however, mentioned actively avoiding Apple products as a result of the tracker software incorporated in these. This is perhaps an indicator of the ongoing development of expertise in some participants, as a result of their own experiences and those of others, that goes alongside continuing involvement in burglary and the disposal of goods:

> 'You couldn't take the phones, the tablets, 'coz they're Apple, they've got trackers, that's the reason why I wasn't taking them' (Participant 111).

> 'Don't touch any iPad stuff, I can sell iPhones, I can't sell Apple computers, because they're traceable, very easily traceable, and they take anonymous photos, put the password in twice wrong... and they take a photo of you, without the computer telling you, one minute you're tapping in a number, the next minute it's taken a photo of you'. (Participant 118)

Hidden in a box in a filing cabinet within one of the 'virtual' rooms was a passport. Upon finding this, participants tended to automatically talk about whether they would take it or not. It prompted the subsequent discussion of the desirability of identity documents, and over two thirds of participants identified that the popularity of such items had increased in recent years:

> 'Yeah definitely, passports, credit cards...go shopping on their cards, clone the cards put

them back' (Participant 019).

'Oh yeah, that's big money, 'coz there's a lot of immigrants coming over, they need to stay in the country, to work in the country, if they can come over and it's already there, they don't have to wait... it's a long process, so they can get straight into work' (Participant 029).

'Yeah, it's good money isn't it. Sell them to illegal immigrants' (Participant 051). 'Yeah 'coz

you can do many stuff with them...fraud, it's simple on a laptop' (Participant 058).

'Credit cards maybe, the amount of people that have their credit card in their wallet then have their pin number in the back of it somewhere too...' (Participant 077).

A number of participants asked if they could take the car (parked outside the house), or whether the keys positioned by the front door were for the car, prompting further discussion on the likelihood of taking car keys. Some participants maintained that they would *not* take the car (*n*=17, 28%):

'I don't mess about with people's cars. I don't see the logic in it really, 'coz with the new cars a lot of them are GPS, they can be tracked' (Participant 057).

While for those who did, this was either to transport a larger number of bulkier goods from the property (*n*=12, 20%), or because taking the car was seen as an added bonus (in terms of additional profit, or to facilitate further crimes (*n*=6, 10%):

'To take stuff away, you need a vehicle to take it away with. If you leave your car keys on the side that's just giving me the opportunity to say take my car - take the bigger and heavier things because they're able to move them out quickly' (Participant 037).

'If you're going round to burgle, you've got to take the car keys, as well as stuff, or where are you going to put it. I'd grab the car keys straight away, go and grab what I've gotta grab, then go and take it all out to the car, drive off' (Participant 071).

'Yeah take the car, use them for other crime, get them plated up' (Participant 019).

‘It's so hard to steal a car now, the only way to get them is with a key. There's a lot more gangs around, buying cars’ (Participant 085).

‘Taking them at the same time, ‘coz the cars can't get taken unless you've got the keys...selling the cars, re-plating them and selling them on’ (Participant 092).

‘If there's a brand spanking new car on the drive why not leave in their car. Until the burglaries reported stolen the cars not reported stolen’ (Participant 117).

Very few participants (*n*=3, 5%) indicated that targeting a property purely for the car keys (without burgling the rest of the house) was something they might be involved in, suggesting that this may be considered a separate crime from traditional residential burglary:

‘You still have to burgle a house to get the car keys out, so to me if you're gonna open up a letter box and get a front door open to get a set of keys you might as well... [burgle the whole house]’ (Participant 001).

Forensic Awareness

Another theme that emerged in relation to actual behaviour while committing the burglary was awareness of forensic issues. To our knowledge, this has not been explored in research before. Twenty-five participants (41%) described themselves as being aware of the possibility of leaving forensic traces, and thirty-two (51%) maintained that they would exercise caution with regard to this issue. However, the actual precautions described were relatively rudimentary. They tended to be limited to the use of gloves (or covering their hands with coat sleeves), and the disposal of shoes after the event. The contradiction is highlighted by the following participant:

‘Very aware. If I touch it, I take it. Other than that, I would wear gloves. If I didn't have a pair of gloves on, and I was able to get in the house without leaving my DNA or fingerprints my motto is if I touch it, I take it’. (Participant 057).

Only six (10%) participants identified the possibility of leaving DNA evidence through sweat, hairs, sneezing and similar, for example:

‘Cover your hands, wear tight fitting clothes so you don't lose any fibres or hairs from your clothes, headwear, stop hairs being left behind. Make sure you don't leave any breaths on the window, sweat, blood’ (Participant 056).

‘A lot of burglars also shave their hair off, so it doesn't leave anything behind, doesn't leave any evidence’ (Participant 077).

Encountering Homeowners

Whilst conducting the ‘mock’ burglary, many participants asked if there would be anyone in the property, or if anyone would come home, and when questioned further 23 (38%) participants specifically said they only targeted empty properties (this is in line with previous research, e.g. Nee & Meenaghan, 2006; Wright & Decker, 1994). If the homeowner returned, the response of the majority (*n*= 35*)* was to ‘run’. The exceptions to this were those who did ‘creeper’ burglaries (anticipating if the homeowner is in, they are more likely to find wallets, keys, money, etc.), (*n*=5, 8%), and those who targeted drug dealers (*n*=2, 3%):

‘My type of burglary, the police call them creepers, so...you're more likely to find the money’ (Participant 064).

‘I do creepers 'coz there's definitely stuff in the house’ (Participant 111).

‘I used to like doing creepers because you're guaranteed to get money in there, like a wallet, a pin number’ (Participant 124).

‘I used go out robbing crack dealers...they'd be in the house...I used to hold them hostage and...there's lots of money involved’ (Participant 108).

For many participants (*n*=22, 36%), the only reason for abandoning a burglary was due to being disturbed. Two years before data collection, a change in UK law increased right of householders to use reasonable force to protect their property. Two thirds of the sample said this would double their efforts to make sure the target was unoccupied:

‘Someone entering the premises, that changes the burglary into aggravated burglary’ (Participant 010).

‘I wouldn't do a burglary while someone is in the house sleeping because it's classed as aggravated burglary. The time is quite...9 or 12 years, burglary is different’ (Participant 057).

Four participants reported that the recent change in the law would encourage them to carry a weapon for self-defence or that it would increase the likelihood of them making the situation more

aggressive:

> ‘Now I think if you're approaching me with a weapon I'm going to approach back with a weapon’ (Participant 107).

For most participants (*n*= 35, 57%), this change meant they would be extra careful not to meet their victims:

> ‘One of a burglars’ worst nightmares is getting into a house and a) someone being there, didn't realise, or b) someone coming back, that's got to be the most frightening thing that can happen for the burglar as well as the people coming back’ (Participant 119).

> ‘If you was … breaking into someone’s house you'd have to make sure no-one was in so you don't have to go equipped. You'd have one person at the front of the house knocking, and the other person would be in the back garden. You'd knock on one door and if no-one answered that house is good, and you'd literally do the whole row’ (Participant 138).

The Search

The use of the simulation enabled the research team, for the first time, to observe and record the routes taken by burglars inside the property, alongside their verbalisations. Kuipers, Tecuci and Stankiewicz (2003) describe the use of a ‘route skeleton’ heuristic by expert wayfinders. This perspective notes that those familiar with the layout of an environment make a more efficient search that deviates from a central pathway (or spine) than novices who adopt a more haphazard, random approach to a search. This was also evidenced by the movements of participants in this study. The level of burglars' experience was apparent in the routes taken around the property. Twenty-two (36%) participants pointed out whilst navigating the property that this would be the ‘usual’ way they would approach their search. The systematic recording of these indicators of expertise, and identification of related verbalisations as participants undertook the burglary, and the subsequent development of ideas in the interview provides a clear justification for the use of the technique in developing the theory of dysfunctional expertise (Nee & Ward, 2015). Descriptions of the search included:

> ‘Start from the top and work my way down’ (Participant 088).

> ‘First you have a quick glance at everything, then you go from top to bottom and then you grab everything that you think are most valuable and go.’ (Participant 091).

> ‘Check what's in every room, start upstairs and clear down, check in every room so you

know what to grab on the way down, and obviously don't go anywhere near the kid's room 'coz I've got kids myself and I'd never do that' (Participant 117).

'The first thing a burglar does is go upstairs and look for gold. You wanna look for small items, expensive items. Especially if you can put them in your pocket so if you're walking out your walking out the same way you walked in. I would have double locked the front door as well. I went straight upstairs first. As I'm walking, I'm clocking things, thinking I'm having that on the way down. Unless I see something really expensive, I will grab that, if it's small. If it's big, I'd unplug it, wrap it up and leave it where it is, in situ. Then I'd go upstairs, do whatever, normally jewellery boxes, cash, all burglars are looking for jewellery boxes and cash first of all, and then anything small that can be taken afterwards, and then TVs and that as a last resort, but you're always looking for small things first.' (Participant 118).

The findings described in this section align with findings of previous research in relation to target selection and the search of the property, demonstrating the validity of the VEM in the investigation of burglary behaviour. In addition, it allowed us, for the first time, to watch an experienced burglar 'in action', providing a fascinating insight into the actual commission of the crime. The additional free verbalisations, followed up by focused interviews, allow for the identification of invaluable information for crime prevention, a benefit that can be further developed in future VR research both with burglars and other types of offenders.

Substance Misuse and its Impact on the Criminal Career

An interesting finding that also highlights the added value of our method is the frequency with which participants reported feeling uncomfortable while exploring the environment, and that this feeling was experienced more vividly as they were experiencing the burglary sober, whereas in real life they would often have been under the influence of drugs and/or alcohol. We can surmise that the simulation was successful in recreating the cognitive, motivational and emotional factors related to the offence, and that it encouraged participants to volunteer details considered by the offenders themselves to be most important in their offending behaviour. However, the difference in mental state (sober versus high) when committing the offence may be problematic in drawing further conclusions at this point. It is worth noting, however, that the level of expertise demonstrated by experienced burglars in their navigation of the environment, and the concurrent and subsequent verbalisations did

not differ between those who identified drug use as a primary motivating factor and those who did not, an issue for the development of the theory of expertise discussed in more detail later. The importance of drug use in the decision to offend emerged again as a theme when participants were asked about their previous offending history in order to categorise them according to their level of experience. Initial involvement in residential burglary generally began in the early teens, commensurate with the well-established age-crime curve (Farrington, 1986; Farrington, Piquero &

Jennings, 2013). Early involvement in crime was often related to substance abuse with a third of participants (*n* = 21, 34%) directly linking the onset of their burglary behaviour to drug use or addiction (most commonly cannabis and heroin, followed by crack cocaine). When talking about their criminal history, participants commonly described using burglary to fund a drug habit for a number of years, and then stopping their participation in burglary for a period in conjunction with abstinence from drug use. This time of 'clean living' appeared to come to an end for many with the development of heavy alcohol consumption, resulting in convictions for violent offences:

> '[Current conviction for] fighting, drinking too much. I was on drugs when I was doing burglaries, then I give up the drugs, then I started drinking'. (Participant 085)

> 'Was doing a couple [of burglaries] a week, then gave up drugs, started drinking – fighting'. (Participant 107).

We know from surveys of arrestees (Holloway & Bennett, 2014) and samples such as Cromwell, Olsen and Avery (1991), Clare (2011) and Wright and Decker (1994) that drug use is high in burglars. When discussing the frequency and time frame of their involvement in residential burglary, many participants in the current study reinforced the known link between drug use and burglary involvement (e.g. Bradford & Payne, 2012; Glaze & Herberman, 2013; McSweeney, Hough & Turnbull, 2007). Many specifically reported that they would only ever consider burglary as an option when drug dependence was a motivating factor (*n*=18, 30%):

> 'That's the only thing that's made me do crimes, if I'm not on drugs it wouldn't be entering my head... I don't agree with burglary at all but at the time when you're looking for your new way of making money for a fix, all the things go out the window to be honest' (Participant 124).

Given the low clearance rate for burglary and the high prevalence of drug misuse in residential burglars in general, and the findings described above, it seems reasonable to suggest that drug dependence does not adversely affect the development of expertise. Research into the effect of illegal drugs on cognitive functioning suggests that cannabis use and heroin use affect the areas of the brain controlling short-term memory and impulse control, respectively (Lundqvist, 2005).

Dysfunctional expertise, however, is dependent on long-term memory function (automatic recognition of cues stored in rich cognitive schemas, triggering routine behavioural scripts; see Nee & Ward, 2015). We note that even when completing the simulation in a (presumably) sober state, participants who reported the main motivation for burglary to be drug related demonstrated the use of expert decision-making in the completion of the virtual burglary, supporting this theory. One could suggest then, that while the use of illegal drugs may impact on motivations and goal-driven behaviour leading up to, and after the offence, once engaged in the actual burglary itself, experienced burglars are able

to function in a similar manner to non-drug using experts.

The proposition that even drug using offenders are able to demonstrate skilled and efficient behaviour and decision-making during the offence needs considerable further research. It is, nonetheless, somewhat supported by the observation that burglars are very rarely get caught while actually at the scene of the crime. The skill and expertise they show during the (often successful) commission of the offence is not reflected in their more chaotic lifestyle before and after the event, evidenced in the tendency for burglars to be identified and apprehended after the event (Burrows & Tarling, 2004; Farrington & Lambert, 2000). Extending the simulation to include the time periods before and after the burglary could be a valuable addition to the investigation of the theory of dysfunctional expertise. Participants did, however, admit that the need for drugs impacted their offence related behaviour in a number of ways such as the tendency to take greater risks:

> 'If you're taking drugs you've got a lot more front, you don't have any emotion, your sort of more brave...' (Participant 038).

Similarly, the care taken to avoid detection may be diminished. One participant stated:

> 'I would be very mindful, wiping things, but when I become complacent I'm in the grips of drug addiction, although my plan is to do that, sometimes it doesn't work out that way. I might go careful, go in two gaffs and not get anything then I'm going to get sick if I don't get any money, then I might get complacent, leaving prints and stuff like that' (Participant 023).

This type of behaviour was commonly reported by the drug using participants. They often went to great lengths to demonstrate a level of conscience in the commission of the crime. This most commonly manifested in a desire to avoid entering children's bedrooms:

> 'When you go into the kid's room [during the simulation], I don't like that, I wouldn't do that in real life, If I went into a kid's room I'd just leave straight away' (Participant 092).

> 'When I opened the door to the kid's room, I felt uncomfortable…when I opened that door and its children's stuff, I'm not going in there' (Participant 094).

> 'You walk into the baby's room with the cot and all that, that's why I didn't bother with going in there coz I don't do crap like that, it's like invading something, I know it's, I know you've gone through the whole house but for some reason kids' stuff…' (Participant 120).

> ‘I wouldn't touch children's stuff, ‘coz I've got kids and I know what it’s like…taking someone's things, and karma as well, if you're stealing off of children you can expect that to come back on you’ (Participant 051).

Participants would also generally avoid targeting people that they knew, although this was again mediated by addiction:

> ‘When I started using heroin a few years ago it makes you change the way you do burglaries, before, I had a conscience, I'd rather do it to a rich person than a council estate but it [drug addiction] makes you devious, I've even done it to people I know, it hurts me now...’ (Participant 043).

Additional Insights Identified Through the Use of the Virtual Enactment Method The possibility of free verbalisation that can be encouraged further whilst using the simulation has the potential to uncover moral considerations from the perspective of the offender, and to explain the often conflicting reports of moral compared to actual behaviour highlighted by these quotes. The use of the ‘think aloud’ process requires that participants simply vocalise their actions and thoughts without further explanation, which in this case may identify the actual level of moral judgement used by offenders in undertaking the burglary – this may be at odds with their reporting, particularly after a time of reflection and possible intervention in prison. This evidence of remorseful reflection while undertaking the burglary is a novel aspect of our method, and a focus on this in future simulations may resolve some of the issues regarding discrepancies between reported and actual behaviour. The findings suggest the need for further investigation of the role of drugs and alcohol in the escalation from acquisitive to violent offending. Clear links have been made between drug use and crime (e.g. Bradford & Payne, 2012; Lobmann & Verthien, 2008; McSweeny, Hough & Turnbull, 2007). Bennett, Holloway and Farrington (2008) support the causal link theory ('drug-use-causes crime’ or ‘crime-causes-drug-use’) suggesting the strength of the relationship depends on drug type and crime type. Casey (2015), however, notes the indirect link where drug use and crime are both caused by other variables, or a general association between drug use, offending and other problem behaviours and suggests that research that examines the link between drug use and the development of

dysfunctional expertise is needed. Given the prevalence of drug use among this type of offender and the value of examining both expertise and drug use using the VEM, it is certainly worthy of further investigation.

Actions and Feelings After the Burglary

Twenty-three (38%) participants said that selling the goods would be their first priority upon leaving the target property. Disposal of stolen goods did not seem to be a problem for experienced burglars, with most having established criminal contacts in place, 'fencing' the items within a very short period of time:

‘Usually I'd have a car, if I didn't have one, I'd have a bike. I won't usually go for stuff like TVs, I'd go for phones, laptops stuff like that. Jump on the bike and go, straight to the dealer and sell it, I won't hold on to anything ...20 minutes, half an hour’ (Participant 111).

‘Straight to sell it ... I wouldn't take it if it wasn't already sold’ (Participant 124).

This quick turnaround was important for two reasons; the immediate need for drugs and also the risk of being caught with stolen goods. Most participants would take the goods to the contact themselves, with only five (8%) participants stashing the goods for any period of time, either because they were involved in night time burglaries, or to allow the receiver of stolen goods to reach them:

‘Somewhere to stash the stuff, once you've stashed it try and find a buyer to for it right away. The quicker you get rid of the stuff the better’ (Participant 92).

The use of pawn shops or similar outlets appeared to be on the decline, due to the need for increased identification in recent years. Similarly, selling goods on the internet was often considered to be too risky and too slow.

Regarding emotions or feelings immediately after the burglary, one third (*n*= 21, 34%) said they either felt nothing (‘it’s just like a job’), or that they were only concerned with the procurement of drugs:

‘It didn't faze me at all, I done it to pay for drugs’ (Participant 55).

A number of participants described excitement or an adrenaline rush (*n*=8, 13%):

‘...especially if you get chased, that's just as addictive as any drug’ (Participant

108)

or feeling ‘great’ after a good ‘touch’ (*n*=3, 5%), in line with Katz (1988) description of the euphoria of the thrill of acquisitive crime, and the intense elation reported by Wright and Decker’s (1994) sample after the burglary. Only five (8%) participants reported any feeling of remorse immediately afterwards, more so in the longer term, after a period of non-burglary and a prison sentence:

‘No not at the time, I know how unacceptable it is, how heart-breaking it is, but at the time I didn't care about, I didn't think about it, it wasn't anything personal, just thinking about

drugs' (Participant 85).

It is common for recovering addicts and desisting offenders to claim they were not being their true selves when committing their crimes (Maruna, 2004). In a study of drug-related violence (carjacking), Copes, Hochstetler and Sandberg (2015) reported many incidences of offenders saying drugs made them different and act in ways they would not normally behave. They proposed that drug use not only has implications for actions and moral decisions, but also fundamentally changes an individual's personality, while simultaneously acting as an explanation and justification for an individual's behaviour. In the current study, the importance that participants placed on drug use as a motivator for their offending behaviour supports these findings and can be focused on in more detail in future research that uses the simulation.

Participants' Experience of Undertaking the 'Mock Burglary'

Before we conclude, we reflect on the potential of our new visual methodology from the perspective of the 'experts' themselves. One of the main priorities of the Virtual Burglary Project was to demonstrate the effectiveness of this visual, interactive method as a tool to elicit more open, detailed responses during data collection. As such, one of the main focuses of the interview conducted after completion of the simulation was to understand participants' experience of undertaking the simulation. Many participants vocalised their feelings as they navigated the virtual neighbourhood, allowing for discussion of the simulation in much greater detail, and for post-simulation interviews to be targeted directly toward the issues identified by individual participants.

Participants engaged in the simulation, and were often very keen to identify ways in which it reflected real-life experiences, as well as share ways in which they felt it could be improved:

> 'It would probably get some people talking about it, some people bottle it up and don't talk about it, like coming in today, doing this, I probably wouldn't have talked about it' (Participant 072).

Harper (2002) observed that the use of photographs in sociological research showed, from the perspective of informants, how little the researcher understood of their world, prompting them to give suggestions on how to improve the process. Similarly, Collier and Collier (1986) described how

participants became experts, leading the researchers through the content of the research. We experienced a similar desire for participants to 'teach' us where we were going wrong, which ultimately uncovered more detailed information about the burglary event in the process.

Improvements to the simulation were generally related to its usability (desire to move more quickly, duck under windows, creep, jump over fences, and so on), or ways to make the search more realistic (more things hidden, being able to tip over beds, look on top of wardrobes or under beds). Feedback on the layout of the house and the realism of the layout compared to real-life was in general positive:

‘The sort of things you go for are laying about there, like money and...’ (Participant 043). And the most common criticism was the method of entry to the property:

> ‘It's quite good apart from you don't have to break in, it was quite effective really’ (Participant 043).

As mentioned earlier, while each of the properties that could be targeted were designed to look different from the street (blinds up or down, different items in the window), once up close the interior layout of the property could be clearly seen. A number of participants noticed during their ‘scouting’ period that all the properties were identical inside, and that this reduced the level of realism. This is an issue that can be addressed in future, more detailed simulations, but does demonstrate the level of awareness of the burglars as they rapidly assessed the environment. It is also an example of how the use of the simulation identified aspects of behaviour that might not have arisen in interview.

The inclusion of more high value goods in the house would improve the realism, as would incorporating the need to break into the house, and to ‘rummage’ to find valuable items. More people, either moving in the street outside or inside the property would also be a valuable addition. These improvements, as identified by the ‘experts’ themselves, are relatively easy to incorporate into future simulations, and despite these limitations, comments demonstrating the immersiveness of the simulation were common:

> ‘I was kind of panicking actually, what to do, where to go’ (Participant 063).

> ‘Uncomfortable, but that was only like the first couple of minutes, after that I forgot about what I was thinking and feeling’ (Participant 087)

The simulation was successful in eliciting an emotional response in some participants, and this was generally related to feelings of discomfort when entering and searching the property. The unease reported was most often in relation to the invasion of another person’s property rather than any fear of being caught, demonstrating the success of the simulation in eliciting remorseful reflection. This is to be expected, as there was no actual risk involved for the participant, but also may be influenced by the participants current situation (in prison, where reflection on past behaviour is more likely, and may be encouraged through intervention programs):

> ‘It made me feel uncomfortable about the whole situation’ (Participant 087).

‘I felt bad going through the kid’s room and that, and the baby’s stuff and that, but that's the stuff that sells unfortunately’ (Participant 077).

‘I had real butterflies in my stomach’ (Participant 102)

The process also successfully reminded some participants of other emotions and feelings experienced when committing a burglary, and we feel that introducing some element of risk (setting off of an alarm, police sirens, etc.) in future simulations could increase this experience:

‘Quite exciting. You do get a massive adrenaline rush when you're doing things ... it's not always about the money, it's about the buzz...the thrill of being chased, if you're being chased by the police, your hearts all like this, it's better than any drug...you'd want to go out and do it again, more the thrill of it see... for me it just brought back all the memories.’ (Participant 108).

For those who felt that the simulation was not sufficiently similar to a real burglary (*n* =7, 11%*)*, or that described it as ‘just a game’ (*n* = 2, 3%), it is interesting to note that the level of disclosure and spontaneous discourse while navigating the neighbourhood and in the interview afterwards was not noticeably different than for those who reported feeling more engrossed or emotionally engaged in the simulation.

The tendency for even the most reticent participants to want to highlight the limitations of the virtual neighbourhood, and to teach us about how we could have done it better was a valuable and unexpected additional source of rich information, which could then be built upon further in the post simulation interview. Once engaged in the task, and having already mentioned these improvements whilst navigating the neighbourhood, participants were more inclined to elaborate when prompted later, and undoubtedly shared more information about their skill and experience than they would have in an interview alone. The use of interview methods with offenders is an invaluable tool in creating a

rich picture of offender experiences, incorporating factors such as motivations, decision-making, circumstances and methods used in the commission of the crime (Horney, 2001), but may be subject to the limitations of memory. Nee (2004; 2010) provides an extensive review of how the use of methods that include memory retrieval cues (such as the simulation described here, and tools such as the life event calendar; Freedman, Thornton, Camburn, Alwin & Young-DeMarco, 1988) alongside an interview significantly improve the accuracy of memory in recalling past criminal events. Nee (2010) also suggests that intellectual engagement in demanding cognitive tasks (such as the virtual burglary) increase the validity of the response and decrease deception, a benefit that we feel has been demonstrated in the responses of participants in the current research, and that can undoubtedly be built upon in future research using the VEM.

Finally, the feedback recorded from participants' comments while completing the virtual

burglary, and from direct questions in the interview provides us with an invaluable insight, from the mouths of the experts themselves, into how future simulations can be developed to gather even more valuable and relevant data about the burglary event and the motivations and decision-making leading up to, and after the burglary itself.

Conclusion

The current study aimed to address the questions of whether VR can be a useful tool in observing offending behaviour and decision-making. Also, whether VR can be combined with think aloud and interview protocols to elicit valuable offender insights regarding their offence-related behaviour and decision-making. The findings demonstrated how the VR-based methodology was successful in bringing us closer to observing and recording burglary behaviour as it occurs. The use of the simulation as a research tool was successful not only in systematically replicating and recording quantitative indicators of expertise as they unfold, but also in providing an additional, qualitative insight into the decisions made, in real time, as the burglary progressed. For some, this amounted to almost a 'running commentary', for others it was one-word utterances that added context to the movement around the property and the targeting (or not) of certain items. The encouragement of 'thinking aloud' by participants as they completed the virtual burglary, and the tendency of participants to go into greater depth about their actions as they 'taught' the researchers what was wrong or missing from the simulation, elicited greater contextual information about target selection and the search than has previously been found using less immersive visual techniques. This can be developed further in future studies using the VEM to provide valuable information for situational crime prevention strategies that consider motivations and emotions of the offender and the changing interaction of environmental cues. The verbal data elicited from participants as they navigated the virtual environment in combination with the post-burglary interview were in line with earlier burglary research, but in combination with our novel method provided an unprecedented level of detail regarding the burglar's cognitions, emotions and behaviour.

The further development of the VEM to improve the level of realism (guided by the insights of the offenders themselves in this pilot study) will in turn increase presence in the environment and engagement in the task, resulting in even higher levels of disclosure and insights into offence related knowledge. Improvements to the look and feel of the simulation may be supplemented by the inclusion of added risk and reward for the participants (e.g. the risk of setting off an alarm, occupants returning, police sirens, and a means of participants measuring their 'haul') to increase the realism of the task, and so, engagement and disclosure.

By using VR to study burglary, responses to environmental cues indicating security and reward, search methods and the desirability of specific items within the target property can be observed, systematically recorded, and meaningfully researched, informing crime prevention strategies. Similarly, understanding indicators of expertise in burglars, especially the automatic and unconscious nature of the cognitive processes used by experienced offenders, has significant

implications for appropriate interventions at different phases in the development of the criminal career (see Nee & Vernham, 2017). Offender insights volunteered during and after the use of the simulation can be used to provide a current and relevant perspective on the burglary event itself, the motivations for involvement in crime (both generally and specifically to burglary), and the possible reasons for desistance from crime, with implications for both crime prevention and intervention[4]. The methodology can be further enhanced by the use of measures of biological reactions such as heart rate and skin conductivity, and the use of eye tracking technology. The use of VR headsets in future research will increase the immersiveness of the environment. Headsets were used in a student study using this simulated neighbourhood (Van Gelder et al., 2017), but were not (at the time) deemed user friendly enough to involve in the study with prisoners. The richness of the data, both qualitative and quantitative, gathered from the use of this new visual tool, despite the limitations of the current simulation, demonstrate the potential value of developing the VEM for use not only in burglary research, but in a wide range of offender-based research. Immersion in VR seems to overcome the two major obstacles criminologists face in understanding offending behaviour when interviewing offenders: retrieval from memory and motivation to disclose.

The findings of this study inspired and guided the remaining three studies that make up this thesis. After collecting and analysing the data presented in the current chapter, the author was keen to use the reported benefits of the VEM to examine some of the more neglected aspects of burglary related behaviour, and to further assess the impact of expertise on burglary decision-making. The next chapter describes the first step in achieving this, concentrating on the decision-process leading to the commission of a residential burglary (the proximal reasons for offending). In discussing this aspect of

[4] For instance, these insights could contribute significantly to the 'Transforming Rehabilitation Agenda' (Ministry of Justice, 2013) in the UK which, for the first time, is aimed at addressing the needs of acquisitive offenders as well as their more violent counterparts.

the offence-chain, reasons for involvement more generally (the proximal decisions to offend) are also discussed.

Chapter 3

Expertise, Emotion and Specialisation in the Development of Persistent Burglary

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Abstract

This article describes a qualitative analysis of interviews conducted among 70 experienced residential burglars regarding the reasons for getting involved in and maintaining criminal behaviour. Themes emerging reflected an interaction between skill-development and affect, which played a key role in the initiation and continuation of burglary-related behaviour. Early participation in burglary seemed to be strongly influenced by the desire for excitement. Over time, the desire for excitement diminished and was replaced by habitual engagement in burglary. With respect to the actual commission of offences, automatic decision-making appeared to be characteristic of the entire decision-chain, from the initial stages to the commission of the burglary. Implications for the interaction between affect, cognition and expertise on diversification, specialisation and desistance from crime are discussed.

Expertise, Emotion and Specialisation in the Development of Persistent burglary The development of offence-related skills and expertise may play an important role in the commission of crimes such as burglary (Nee & Meenaghan, 2006), identity theft (Vieraitis, Copes, Powell & Pike, 2015), street robbery (Topalli, 2006), sexual offending (Bourke, 2012), homicide (Brookman, 2015), and firesetting (Butler & Gannon, 2015). Expertise requires learning and concerted practice within a specified domain (Chi & Bassok, 1989). Therefore, an adequate amount of repetition of the offence is necessary, at least for certain periods of the criminal career (Nee & Ward, 2015). Recent work focusing on achieving a more nuanced understanding of the drivers of offending behaviour (Nee, Van Gelder, Otte, Vernham & Meenaghan, 2019; Van Gelder, Elffers, Reynald & Nagin, 2013) have called for a more in-depth exploration of how cognition and emotion interact in both the initiation into crime and the maintenance of offending behaviour.

The study presented here used the recently proposed Virtual Enactment Method (VEM: Meenaghan, Nee, Vernham, Van Gelder & Otte, 2018) to elicit detailed, qualitative information about offence-related decision-making. Using VEM, participants completed a 'virtual burglary' while undertaking a think-aloud protocol. A semi-structured interview followed, to elaborate on the spontaneous verbalisations arising during the exercise, especially aspects of burglary-related behaviour and decision-making. The current study focused specifically on burglars' general reflections on their early involvement in burglary, as well as examining more closely the more proximal decisions that lead to the commission of an actual offence. For instance, under what circumstances does the initial desire[5]to carry out a burglary arise, and what are the details of the decision-chain leading to a completed burglary hours or days later. These important initial stages of decision-making have been neglected in the literature, with the focus having been more on scoping neighbourhoods and choosing targets. We expected that re-enacting the offence would help trigger more reliable and valid memories of these periods than is possible using interview alone (Nee, 2010). There is a growing body of evidence suggesting that expertise plays a key role in the actual commission of a residential burglary (see Nee, 2015). The current research will investigate the extent to which expertise permeates the decision-making processes that promote the decision to engage in this type of offending.

Expertise in Offending

Repeated engagement in any one type of crime inevitably results in the development of skills and knowledge in the commission of that crime (expertise). Applying established models of expertise to offender decision-making can advance our understanding of how and why people offend and desist from crime, as well as provide valuable knowledge for situational crime prevention and rehabilitation (Nee et al., 2019). In an analysis of four decades of research into residential burglary, Nee (2015)

[5] We know from a wealth of research that burglaries rarely happen on the spur of the moment and are usually the result of a long chain of decisions (see Nee, 2015 for a review).

highlighted evidence demonstrating superior cognitive processing in experienced burglars compared to novices in the scoping of a neighbourhood, target selection and the search of a property. To explain this, Nee (2015) drew on literature from mainstream cognitive psychology to argue that experienced offenders may develop a level of expertise comparable to that seen in individuals experienced in other (normative) fields (e.g. chess, Chase & Simon, 1973; or music, Lehmann & Gruber, 2006).

Key features of the expertise model from cognitive psychology across many domains of experience include the development of dense and interconnected cognitive schemas in long-term memory, automaticity, selective pre-conscious attention and heightened situational awareness of relevant environmental cues (Nee & Ward, 2015). For the purpose of this research, a cognitive, neuroscientific definition of consciousness was adopted (Nordgren, Bos & Dijksterhuis, 2011), which infers a graded rather than dichotomous (on/off) depiction of awareness. The key features of expertise are also evidenced in the early interview-based research with burglars (e.g. Cromwell, Olson & Avery, 1991; Wright & Decker, 1994), in experimental work (Bennett & Wright, 1984; Logie, Wright & Decker, 1992; Nee & Taylor, 2000), and recently using increasingly sophisticated simulation techniques with virtual reality (VR) (Meenaghan et al., 2018; Nee et al., 2019; Nee, White, Woolford, Pascu, Barker & Wainwright, 2015; Van Gelder, Nee, Otte, Van Sintermaartensdijk, Demetriou & Van Prooijen, 2017). In comparison to householders, students, police officers and non-burglar offenders, burglars appear able to more efficiently navigate neighbourhoods, recognise and process a wider range of relevant target selection cues (e.g. those indicating access, occupancy, surveillability and wealth), enter the property, and undertake the burglary (e.g. Logie, Wright & Decker, 1992; Nee & Taylor, 1988; 2000; Wright, Logie & Decker, 1995).

The pre-conscious scanning of the environment and automatic nature of expert decision making means that accurately assessing the underlying cognitive processes that enable the more effective processing of environmental cues noted above can be problematic. This is because they reside beneath the awareness of the actor once they have been practised many times. The use of virtual environments helps to address limitations of recall by effectively reinstating the context of the crime, and allowing for the re-enactment of the event. This provides a means to observe behaviour that may not be subject to conscious awareness. Incorporating VR allows for the discussion of actions and emotions as they happen in response to visual cues rather than relying on memories of past events, thus addressing the issues related to the recall of unconscious cognitions. In a series of studies, researchers working on the Virtual Burglary Project[6] have demonstrated that the use of VR can be an effective tool in replicating real-life behaviour (Nee et al., 2015), eliciting emotional response (Van Gelder et al., 2017), and identifying the indicators of expertise in experienced burglars compared to non-burglar offenders and matched non-offenders (Nee et al., 2019). Furthermore, Meenaghan et al.

[6] The Virtual Burglary Project is an ongoing collaboration between the University of Portsmouth (UK), the Max Planck Institute for Foreign and International Criminal Law (Germany) and VU University (Netherlands). It aims to use virtual environments to understand offending behaviour, cognition and emotion in burglars.

(2018; Chapter 2) reported improved rapport and engagement, resulting in greater spontaneous and non-spontaneous (interview) disclosure of offence-related behaviour using the VEM. In the current study, we intend to capitalise on the triggering of memory scripts and schemas about burglaries during the recent re-enactment to explore with participants what happens in the days, weeks and hours before the burglary and what they believe motivated them to offend in the first place. **Motivation to Offend**

The development of offence-related expertise may offer insight into why people begin and continue to offend, and why they do so within a specific domain. An interesting question would be how accruing expertise influences motivation. The salience of well-established influences on offending, such as financial gain (e.g. Bennett & Wright, 1984; Cromwell, Olsen & Avery, 1991; Nee & Taylor, 1988), drug use (e.g. Bennett & Wright, 1984) and the influence of others (Mullins & Wright, 2003; Shover, 1973; Wright & Decker, 1994) vary across the criminal career, and it may be that expertise interacts alongside other factors in the decision to burgle. For example, expertise could reduce the need for the reliance on others in the commission of the offence, as developing skills enable the more experienced offender to complete a successful burglary alone; thus, increasing reward and reducing the risk of being 'grassed'. This is reflected in increased lone offending in older offenders (Carrington, 2002; Meenaghan, Nee, Van Gelder, Otte & Vernham, in prep.; Piquero, Farrington & Blumstein, 2007), further delineated by Hodgson and Costello (2006), who reported increased solo offending with both age and the progression of the criminal career. Additionally, cognitive scripts guiding target selection may reduce the need to share information about potential targets. Drug use as a facilitator for offending (increasing confidence and heightening senses; e.g. Cromwell et al., 1991; Hochstetler, 2001) may reduce in importance as the skills (and related confidence in ability) associated with expertise increase. Equally, however, a dependence on drugs may develop in this time. There is also growing support for the need to account for the influence of emotion on decisions to offend. The current research provides the opportunity to assess the interaction of expertise and affect on decision-making, from the perspective of the offenders themselves. **The Role of Emotion**

Psychological motivations (e.g. excitement and revenge) have been identified as almost as important in the decision to burgle as monetary gain (Cornish & Clarke, 2006; Cromwell et al., 1991; Wright & Decker, 1994). The anticipation of the 'good time' that can be achieved through the proceeds of offending plays a key motivational role in burglary (Shover & Honaker, 1992). Similar effects have been reported in other forms of acquisitive crime (e.g. shoplifting; Cromwell, Parker & Mobley, 2003; street robbery; De Haan & Vos, 2003). Van Gelder, Elffers, Reynald and Nagin (2013) propose that theories of criminal decision-making must consider not only the prediction of financial gain in the cost benefit analysis of traditional rational choice theories, but also emotions experienced prior to, and during decision-making. In addition to the impact of the immediate situation on decision making, mood states unrelated to the criminogenic situation (affecting, for example, the assessment of

risk) may also play an important role. As such, the experience of emotion and mood can serve as triggers for criminal motivation, but also influence the assessment of the environment and situation,

perhaps resulting in more reckless behaviour (Van Gelder, de Vries & Van der Pligt, 2009), or triggering expertise scripts and schemas (Nee & Vernham, 2017).

Specialisation and Diversification

Any period of specialisation in crime observed in an individual's offending history is often considered to be part of a wider, more versatile offending pattern when considered across the entire criminal career (Piquero, Farrington & Blumstein, 2003). However, while diversification appears to be common in the majority of offenders, a wealth of research suggests at least some level of shorter term specialisation (DeLisi, Beaver, Wright, Wright, Vaughn & Trulson, 2011; Jennings, Zgoba, Donner, Henderson & Tewksbury, 2014), particularly for property offenders as they get older (Armstrong, 2008; Nieuwbeerta, Blokland, Piquero & Sweeten, 2011). The development of expertise may provide an explanation for this observed specialisation, as it enables a more successful, less risky, and more lucrative crime. Inevitably, lower risk crimes with high financial reward are more likely to be repeated (in line with Rational Choice Theory, Cornish & Clarke, 1986), therefore expertise may increase the potential for burglary to be chosen over both alterative crime options and non-offending paths. The current study aims to investigate the impact of expertise on specialisation, whilst factoring in the influence of emotional states (both immediate and anticipated) on the decision making processes.

The Present Study

Interviews with 70 experienced burglars (aged 18 to 61 years) were used to examine reasons for getting into crime (distal influences) and for undertaking recent crimes (proximal influences) to understand in a more detailed way the nature of these decisions. The range in age of participants interviewed enabled investigation of these influences at different stages of the criminal career. The study sought to address two key questions. Firstly, is it possible to identify indicators of expertise in the proximal and distal decisions to undertake a burglary? And secondly, does expertise impact on the continuing involvement in burglary, and can it be related to escalation in offending and specialisation in crime type?

Method

Participants

Interview data from 70 respondents were analysed: 33 from adult prisons (> 21 years, M_{age} =

39.19 years, *SD* = 9.93), and 37 from Young Offender Institutions (YOIs; 18-21 years, M_{age} = 20.30, *SD* = 1.43). Category 'B' and 'C' adult prisons were purposively targeted for the recruitment of adult samples, as these are where those sentenced for burglary are typically held[7]. In accordance with conditions set by Her Majesty's Prison and Probation Service (HMPPS), participants were required to have previous or current convictions for burglary. Members of prison staff identified potential participants (those with relevant convictions), and these were invited to participate. Previous research (e.g. Bennett & Wright, 1984; Nee & Meenaghan, 2006; Wright & Decker, 1994) suggests that the use of official offence history may not be the most reliable indicator of experience in burglary, as many experienced burglars do not have extensive convictions for burglary. Accordingly, participants' experience of burglary was also assessed through spontaneous verbalisations during the simulation, and in a semi-structured interview after completion of the virtual burglary. Estimated total lifetime burglaries (or descriptions of numerous, regular burglaries over an extended period) and quality and quantity of knowledge about burglary (in line with skills and knowledge identified in previous samples examining decision-making in burglars, e.g. Clare, 2011; Cromwell et al., 1991; Nee & Taylor, 2000; Wright & Decker, 1994) were considered. Inclusion of participants in the final analysis depended on the agreement from three members of the research team regarding level of experience using these criteria. This ensured the exclusion of participants who had embarked on only a small number of burglaries (fewer than five) for which they had been caught (*n*=16) and ensured the inclusion of those participants that had gained sufficient 'successful' experience to have had the opportunity to develop skills through experience. The final sample was predominantly white British (73%), with 8% identifying as black British, 7% black African or black Caribbean, and 3% Asian British. The remainder of the sample were white European (3%) or Gypsy (6%). It is important to note that, while not explicitly recorded in this study, it was assumed that participants came from backgrounds typical of acquisitive offenders in terms of socio-economic disadvantage and substance misuse, as has been well-documented (e.g. Nee & Ioannou, 2018).

Procedure

Ethical approval was gained through the Science Faculty Research Ethics Committee at the University of Portsmouth in the UK. Approval for the research to be conducted in HMP/ YOIs was obtained through HMPPS in the UK. Consenting prison governors assigned a member of staff to identify potential participants and distribute information sheets to those eligible for participation (those with convictions for burglary). Those participants interested in taking part were invited to meet

[7] UK (male) prisoners are categorised according to risk of escape, harm to the public, and threat to the control and security of the prison; thus, prisons are organised into four categories ranging from A (high security) to D (open prison).

the researcher to discuss the research and ask any questions prior to consenting to take part. Information sheets were read out loud, to avoid any issues with embarrassment over literacy issues, and anonymity of data was assured. Consent forms were stored separately from interview and simulation data. All consenting participants completed data collection regardless of level of

experience. Those without sufficient experience were later excluded from analysis. Data were recorded using digital voice recording devices, consent for which was gained prior to interview.

As noted in Chapter One (Introduction), data were collected simultaneously for studies 2, 3 and 4. After collecting demographic data (age, education, and involvement in legitimate work), participants were instructed on the use of the simulated environment (see Chapter 2 for details of the simulation), and asked to 'think aloud' as they completed the task. The virtual burglary task was followed by the semi-structured interview, which lasted approximately 45 minutes. Although some aspects of the interview looked at the time period before the burglary, the decision was taken to complete the virtual task first to maximise on the reported benefits of increased rapport, enhanced disclosure and triggering of burglary-related mental scripts and schemas using the 'Virtual Enactment Method' (VEM) (Meenaghan et al., 2018; Chapter 2). Participants were first asked to elaborate on any pertinent issues arising as part of the 'think aloud' process during the actual burglary, followed by questions regarding the period immediately after the burglary. For example, participants were asked to describe, step by step, what happened after they left the property. Prompts (e.g. where do you go first? Who with? Do you have transport? How long between the burglary and converting the goods?) were used where necessary. After discussion of the processes associated with exiting the scene and the conversion of goods, the interview lead on to the hours subsequent to this (the remainder of the day/ night). They were then asked about: the days and hours before the burglary (and the proximal decisions leading to actually going out and commit a burglary(ies) in the coming period); finally to 'go right back to the beginning', where they were asked about the initial decision to offend and the processes that led to them being involved in residential burglary in the first place. The interview process was, however, flexible, allowing the interviewer to respond to and ask questions as they naturally arose as part of this process. Participation in the study lasted approximately one hour. All participants were fully debriefed and thanked for their time on completion of the study. ***Analysis***

Analysis of data followed a thematic approach, which is a qualitative method for identifying, analysing and reporting patterns (themes) in the data (Braun & Clarke, 2006). Thematic analysis is a flexible and, in the current research, inductive method, following the procedure recommended by Braun and Clarke (2006). NVIVO software was used to facilitate coding. The analysis consisted of six steps. First, the interview data were transcribed, read and re-read to ensure familiarity with the content. Second, codes (features of the data that appeared interesting to the researcher) were generated. Over 60 codes were identified in the early stages of analysis, covering all aspects of the burglary event (the time leading up to the burglary, the actual offence, and the time period after

leaving the property). Third, these codes were reviewed and grouped together in themes. For example, codes related to whether burglaries were completed alone or with others, the benefits of accomplices, the potential costs, the division of roles, and the teaching or influence of others were grouped into a theme entitled 'accomplices'). Twenty-four initial themes were created from the initial 60 codes. In the fourth stage of analysis, themes were reviewed and refined – some were discarded, and others were further grouped together. This was achieved by re-reading the data items collated into the initial

themes, assessing the frequency with which similar issues arose, and the salience of these, and then connecting related codes and themes. For example, items relating to 'accomplices' were clearly associated with the decision to offend in the narratives of participants, therefore these were collated with (for example) those related to the motivation to offend, the normalcy of offending among peers, and the habitual nature of the decision to offend) in to an overarching theme named 'initiation into crime'. Fifth, the themes were defined and named (see below). Finally, specific data items were selected to illustrate the themes and relate them to previous literature.

Analysis revealed four overarching phases/themes associated with the decision to offend: *initiation into crime, progression onto prolific burglary, the proximal decision to burgle,* and *the commission of the offence.* Sub-themes were identified relating to the *impact of emotional reward, diversification and specialisation,* and *the influence of expertise.* These themes and sub-themes were used to communicate shared experience in the study population regarding distal and proximal reasons for committing burglary. The analytical themes and sub-themes were finally examined to draw conclusions from the data, which reflected the burglars' perception of the development of prolific offending and their involvement in residential burglary.

Results and Discussion

Initial discussion of very early involvement in crime reflected previous findings (e.g. Piquero, Farrington & Blumstein, 2007) in relation to the relatively young age of first criminal activity (M = 12.92 years, SD = 4.29). Living in a criminogenic neighbourhood alongside offending peers played a major role in early involvement in crime:

> ‘Like where I’m from… that’s what it’s like, it’s crime, like, that’s the norm’. (Participant 009, Young Burglar [YB])

> ‘I was just born on the streets… that’s what people do […] everyone was doing the same thing’. (Participant 052, Older Burglar [OB])

This was the case for the younger and older offenders alike. Their descriptions were more reflective of a drift into crime rather than a distinct turning point, serving to highlight the extent to which, even at this early stage, offending was considered an integral and almost inevitable part of participants’ lifestyles. This also points towards a level of automaticity in the distal decision to offend. For younger offenders, it may be that this automaticity arose from ‘a feeling of being swept along by events’ (Youngs & Canter, 2012; p. 236), with other (older) accomplices taking responsibility for making decisions and guiding behaviour, requiring little skill on the part of the young burglar:

> ‘When someone comes up with you, like “fuck it, shall we go out?”, I’d be like, yeah, I’m a whatever type of a guy… a go with the flow type of guy. I don’t come up with the ideas, I’m just there’. (Participant 037, YB)

There is some evidence to suggest that those who offend with more experienced burglars in the early stages of their career may engage in burglary for longer than those who initiate with other novices (Hodgson & Costello, 2006), raising the question of whether shared expertise (reducing the need for learning ‘on the job’, which may result in costly failures) impacts on ongoing burglary behaviour. The older participants tended to assign more personal control when reflecting on their early offending, and their ongoing involvement in burglary. Only the older burglars described themselves as ‘professionals’ in their field, indicating the role that the development of expertise may play in the narratives that promote ongoing participation in burglary.

Progression into Prolific Burglary

The Impact of Emotional Reward

Having completed one burglary, a key factor that seemed to lead to further involvement was the experience of making quick, easy money. The description of one young burglar demonstrates this, but also serves to highlight the additional bonus of positive emotion and excitement:

> ‘I licked my first one with my co-d [co-defendant] and I just had so much money and I was thinking, wow, is this what 10 minutes of work is… and I ain’t gonna lie, I’ll say I fell in love with it, in the car, I’m thinking, bruv, like, half an hour’s work and I got six grand to split two ways, like, wow, like WOW, like…’. (Participant 037, YB)

The notion that financial gain plays an important role in continued involvement in acquisitive crime is well-documented, and it is historically assumed to be a major motivation for this type of offending (e.g. Bennett & Wright, 1984; Cromwell et al., 1991; Scarr, 1973). However, the younger burglars' quotes were also replete with examples of excitement associated with continuing to offend in this way:

> 'I think from then, it was a natural kind of thing, I loved the thrill of it'. (Participant 013, YB)

In addition to the experience of positive affect (e.g. excitement) in the commission of the offence, participants described a (positive) change in mood resulting from obtaining money. This is highlighted in the quote below, but it is noted that the strength of emotional reward associated with the actually taking part in a burglary was described in more intense terms than that associated with the financial reward experienced subsequently:

> 'I guess a bit of it was to feel good, having money in your hand. There's nothing worse than walking up the street having no money in your pocket, looking at a shop thinking I'll get myself a drink, but you can't do it, it's a bit downing. When you walk up and think, ah, I've got a grand in my pocket in cash, it's like… feels good'. (Participant 014, YB)

While the positive affect generated by both the undertaking of the burglary, and the experience of financial gain may both impact on the decision to offend, it seems likely that the greater *affective* pull resulted from the thrill of the offence. Accordingly, it may be appropriate to consider these as separate influences on the decision to offend.

Early qualitative literature has pointed toward affect-laden reasoning, if not as a primary motivator, then as a secondary one in acquisitive offending. Excitement, thrill and increased status have been linked to car theft (Light, Nee & Ingham, 1993) and the release of tension and emotion with street robbery (De Haan & Vos, 2003). Recent developments in affective neuroscience have illuminated the inextricable link between cognition, emotion, brain and body and how this drives

human behaviour (e.g. Pessoa, 2018). Cognition and emotion are seen as the same process in what Maiese (2011, p.119) calls the 'affective framing' that occurs using emotion-based memory whenever we make a decision. The reflections of burglars in the current sample provide support for this view and for Van Gelder et al.'s (2013) perspective, that underestimating the impact of affect on offender decision-making limits the scope of offender decision-making models. It is acknowledged that few researchers now subscribe to a theory of full rationality (Bernasco, Van Gelder & Elffers, 2017; Nee et al., 2019) and that even the original authors, Cornish and Clarke (1986) propose a notion of 'bounded' rationality in which cost-benefit analyses are flawed and prone to error and bias and in which 'satisfactory' decisions are more likely than 'optimal' ones (Kahneman, Slovic & Tversky, 1982; Simon, 1957).

While emotional gains (e.g. excitement, thrill) may be accounted for in a similar way to financial gains in the (rational) decision to offend, participants in the current sample implicated the strength of emotion experienced ('falling in love with burglary'; Participant 037) in the process of engaging in crime more frequently and consequently in a more habitual, automatic manner ('a natural kind of thing'; Participant 013). This suggests that affect, combined with aspects of expertise, may together play a potent role in the automaticity that promotes ongoing engagement in burglary.

Looking in more detail at the points at which affect are experienced, high levels of excitement and adrenaline were important in the decision to reoffend after early burglary experience, and the experience of nervousness, excitement or an adrenaline rush while actually breaking into the property continued to some extent throughout the criminal career for most participants:

> 'Once you're in there, it's just happening like... it is a bit of an adrenaline rush as well, you're in there, your hearts pumping, you know what I mean'. (Participant 009, YB)

> 'It's like when you get to the back door, 'ah, is it open?' Then you start pumping with adrenaline coz you're going in'. (Participant 029, OB)

A downgrading of both the experience and importance of the adrenaline rush as expertise accrued was reported by both (more experienced) younger and older burglars. With consistent practice this (probable) habituation occurred at a relatively early age:

> 'At first, a lot of adrenaline, excitement, but then I kind of got used to it, so it was just normal'. (Participant 047, YB)

> 'Years ago I used to think that it was a bit of a buzz… but now it's not really, I don't really get anything out of it, I just do it for the money…It's just become habit, to be honest'. (Participant 045, OB)

It was common for participants to conclude their descriptions by alluding to the 'normality' and 'habitual' nature of their later involvement in burglary, supporting the relationship between the experience of affect and the development of automaticity:

> 'First times everybody gets nervous with anything, but then the more you do it, the more you get comfortable with your work... A normal thing then'. (Participant 035, YB)

> 'As I started doing more of them, it got more into it... Half the time I wouldn't even realise I'm thinking about it, but I'm looking at a house, you know what I mean, just natural now... when

I'm walking down somewhere, it just kind of clicks, I can control it sometimes, just not all the time'. (Participant 046, YB)

A pattern emerges of initiation into burglary linked originally to the desire for excitement, and the thrill of the offence. This thrill reduces over time and with exposure to burglary, an effect anticipated according to the theories of habituation (e.g. Dijksterhuis & Smith, 2002). Such reduction in response with increased exposure has been demonstrated for both pleasurable stimuli (e.g. Leventhal, Martin, Seals, Tapia, & Rehm, 2007) and for stressors (e.g. Grissom & Bhatnagar, 2009), both of which are likely present in the undertaking of a burglary. Repeated engagement, motivated initially by emotional reward, results in increasing skill and automaticity, leading to habitual offending. Thus, participation in burglary continues beyond the point where excitement is a key determinant in the decision to offend, with financial reward becoming a more powerful (cognitive and affective) driver. During this process, expertise likely leads to a more stable cost-benefit trade-off regarding continuation and proliferation of crime.

The findings above have important implications for recent cognitive theories of offending (Nee & Ward, 2015) regarding the role that expertise plays, but the findings also highlight the influence of affect as part of the decision-making process. The following section considers how expertise and affect impact on specialisation and diversification in crime.

Specialisation Versus Diversification

All the participants in the current research had considerable experience in committing residential burglary. The benefit of this experience came in various forms. First, regular involvement in burglary had the potential to elevate the offenders' status and consolidate their sense of belonging within the peer group. The quote below demonstrates how this might also equate to a shift in perception to a more 'professional' role:

'As soon as I got kicked out of school, I started doing crime… all these popular kids started to try to talk to me… I got involved in a bigger circle of friends, olders and such like… I sort of

looked up to them. I worked my way up, and all these people I looked up to, they're like coming to me for help… so I felt like the boss sort of thing'. (Participant 009, YB)

Second, and in line with previous research on expertise in offending (Clare, 2011; Nee, 2015), experience led to the development of skills that allowed the targeting of more ambitious, and more rewarding burglaries:

'That's where it first started 'til we built up our confidence a bit more. Got to know the game a bit more and how to do it better'. (Participant 012, YB)

'As you get older it comes more, your targets get more… your targets get more established

and more wealthier'. (Participant 045, OB)

Older burglars were more likely to say they had progressed onto other types of crime, although this was not reflected in the current convictions (21 older burglars were currently serving a sentence for burglary). They did have a more diverse range of current convictions (violent offences, aggravated burglary, armed robbery, arson, commercial burglary, possession and supplying drugs) compared to the younger offenders (violent offences, robbery, possession of drugs and sexual offences), supporting the theory that any specialisation is part of a wider, more diverse criminal career (DeLisi et al., 2011).

> 'The commercial route's a lot easier... they don't really care, like businesses, they don't care. Fair enough you're getting it, but they're getting it back. When you go to houses, you start getting people putting photos up on Facebook, coz you could be getting seen on CCTV… do you know this person... I'd rather go down commercial sites to be honest'. (Participant 027, OB)

Older participants who continued to specialise in burglary provided two distinct reasoning processes for this decision. Some felt they had no other choice in satisfying their financial needs:

> '… Burglary's the only thing that you're gonna get money, you're gonna get cash …'. (Participant 029)

While others, in accordance with Youngs and Canter's (2012) 'professional' narrative role, felt they had developed some level of skill and mastery, considering burglary to be their chosen 'career':

> 'But if I was to say, without being nonchalant, to say my profession, as a criminal I am a burglar… It's a job… my job was to go and do this, get here and get out and gone. Once I'm on my way I don't think backward, never. It's a job, it becomes a job'. (Participant 028)

The description of burglary as a job provides further evidence of its routine, habitual nature, and inevitability of the proximal decision to offend. This latter group were notable in their desire to portray an image of being part of a 'better class' of burglar, capable of targeting more secure, more dangerous and more lucrative burglaries:

> 'And to be invisible means you gotta be professional, and to be professional means that you gotta know what you are doing, but you gotta understand the minute you put the word

professional to you being a burglar, your [prison] sentences have just gone up to 5 [years] and over'. (Participant 028)

The 'professionals' considered themselves more able to avoid detection than the average burglar, and framed evidence to the contrary (a current conviction for burglary) as a justifiable risk in relation to the number of burglaries for which they had evaded arrest, and the profit they had made through these successful burglaries. Brezina and Topalli (2012) showed that the experience of arrest, conviction and prison can actually raise an offenders' assessment of their criminal prowess – it enabled them to refine their methods and become more effective in the future. The current sample indicated that the possibility of being caught is ever present, but increased skill, through learning from (both positive and negative) experience reduced the risk to a level considered acceptable in light of the potential gains available:

'Say you do get away with it, you get caught, like say a couple of hours later, you don't care coz it's been a worth it day, I'm going to do… 16 months in jail, I've just earned myself 10 grand…It's highly unlikely you do one burglary you're gonna get caught'. (Participant 053, YB)

Interestingly, a level of perceived professionalism was often accompanied by a shift in the reported motivations to offend. Those participants portraying the 'professional' role suggested that their motivations for burglary were more morally grounded, often for the benefit of others – Participant 028 described his 'job' as '*Robin-Hooding*[8]*'*, and he gave a number of examples of how his financial gains had been used to better the lives of his family and friends:

[8] A reference to Robin Hood, a heroic outlaw in English folklore, famed for robbing from the rich to give to the poor.

'I knew my friend's son had just been accepted to photography college, and he needed all the best stuff… it was a camera, to me that's a couple of hundred quid, bang, but when I thought about it I thought, hold on, I wonder if this would help him, so I rung him up and I said […] is this any good to him? He went, 'oh God, yeah that would help him right out', and I said, well it's a present from me, but, if he fails his course and everything, I'm gonna be pissed off, this is to help him. It's not wrong, well it's not right, but it's not wrong, he's now a proper photographer, and he always says it was because of you […] I dunno, I know it sounds a bit horrible to take from one to give to another, but, Robin Hooding...'. (Participant 028, OB)

These perspectives point towards two possible ways in which the development of offence related skills (and expertise) led to continued specialisation in burglary in the older (and more

experienced younger) offenders. The first was burglary being framed in a negative light in which specific offence-related skills limited the individual to continued burglary behaviour as he had few available alternatives. This was often accompanied by accounts of having experienced little opportunity in life, and of actions being ruled by an expensive drug habit:

> 'The withdrawals, and even the thought of withdrawals, like, supersedes anything that I've told myself before that, you know, and that's generally the pattern'. (Participant 030, OB)

The second portrayed the development of the same set of skills in a far more positive light, elevating the individual to a higher level of 'professional' burglar, justifying continued involvement through superior abilities and motivations:

> 'But the legitimate options, it's not worth my time… the money you end up paying me, I'll make that in an hour after what you'd end up paying me in a week or a month like'. . (Participant 007, YB)

Accordingly, those individuals who had continued burgling into adulthood appeared to either have proliferated the 'victim of circumstance' role apparent in the younger burglars or adopted a role of far greater agency in relation to their offending. In both cases, expertise played a key role in the specialisation of burglary. However, the way that expertise is used to frame the role of 'burglar' may have an impact on the salience of this role for the individual, with implications for specialisation and diversification. The 'professional burglar' role may, for example, require greater investment, and therefore be more stable than that of those engaging in burglary due to a perceived lack of options (who presumably would reduce their involvement when presented with alternatives), or as a result of changes in motivating factors such as drug use. Alternatively, the self-efficacy that accompanies the

role of burglary as a choice may open up the individual to considering different, riskier and potentially more rewarding crimes.

Participants who did not identify as 'current' burglars commonly reported that they had 'grown out' of burglary, progressing onto more lucrative crime (aggravated burglary, targeting drug dealer's properties, commercial burglary, selling drugs). In some cases, this was related to increased experience, indicating that offence-related skills associated with expertise in burglary may be transferrable to other forms of crime:

> 'I stopped doing burglaries when I was about 17. Just getting older. Moved onto a different league of game, I suppose, it was not worth the money, the risk, the time. I can do better things, better money, less… risky for me to get caught'. (Participant 035, YB, current conviction for aggravated burglary[9])

However, offence-related expertise appears to be more related to specialisation than diversification, at least in the short term for younger offenders, but also in relation to the skills that developed that allow older burglars to justify continued involvement in this type of offending, supporting recent work in this area (Armstrong, 2008; DeLisi et al., 2011).

Proximal Decision to Burgle

The commission of a burglary requires not only that it is part of the offenders' repertoire, but also that a decision is made to offend, and to choose burglary over other crime on a specific occasion. Interestingly, participants found it difficult to pinpoint definite decisions to burgle hours or days prior to the crime, describing it more as part of the flow of routine, daily activities:

> 'It's what I'm gonna be doing, innit?' (Participant 003, YB)

For many, burglary was '*something that you do every day'* (Participant 041), again reflecting the automaticity and habitual decision-making of the experienced burglar:

> 'It's sort of like, built in if you know what I mean, it's what we do. […] people like… go out to the pub on a Friday night, we'd go out on the rob'. (Participant 001, YB)

For some, burglary became so routine that it overcame their logical reasoning to stop their involvement:

[9] Participant 035 had a current conviction for aggravated burglary, however throughout the interview he insisted burglary had been an activity confined to his youth. His current conviction involved targeting the property of a drug dealer.

> 'I got a suspended sentence and I was like, sweet, I'm not doing no more, for some reason I still… 'coz it was still such a part of me, yeah I still went out on the rob anyway. I went to court again in the morning, and by that afternoon I was in jail'. (Participant 001, YB)

And for others, identifying a specific reason for burglary appeared difficult:

> 'I don't even know what I wanted the money for, I was going out, doing all these burglaries and that, and I wasn't actually sure what I wanted the money for'. (Participant 001, YB)

> 'I had money, but I just still used to rob houses, like. I already had cash in my pocket…coz you know when you do all these robberies and shit you live a high maintenance lifestyle. Even if I have cash, I want more, like kind of greedy like'. (Participant 037, YB)

It appears, then, that habitual processes guide the decision-making of burglars early on in their career and even at the beginning of the decision chain. For the younger burglars particularly, no specific financial motivation (e.g. a drug addiction) was identified; however, funding an expensive lifestyle was a common motivator. This suggests the primary motivation for burglary has changed little since the early samples of, for example, Wright and Decker (1994), and the 'life as a party', as described by Shover (1996, p.185). As the career develops, financial gain became a more salient motivation, aligning with the comparison of burglary as a job, or a profession. By extension, this made burglary part of the older offenders' lifestyle and not subject to extensive deliberation anymore:

> 'It's always been money oriented to tell you the truth… I dunno, it's really strange because as I said, it was like, my profession, it was my choice'. (Participant 028, OB)

Despite admitting to daily cannabis and frequent cocaine use, the younger burglars maintained this was not habitual, it was just part of their lifestyle. While this may reflect an unwillingness to admit to (or a lack of awareness of) an addiction, only four of the younger participants implicated drug use as driving their decision to offend (the remainder suggested they could afford their use through other means, such as some form of legitimate work (Participant 012), receipt of benefits or money from family (Participant 035), or because they grew their own marijuana (Participant 032)). Ten older offenders, in contrast, identified drug use as a primary motivation, and it was only older offenders who admitted using heroin and crack cocaine (n =6, 9%). Even for these participants, regular burglary came before addiction to drugs:

> 'Well, probably about a third of the way in probably, and you're run by the drugs instead of

> you, you need something in you. Normally crack, heroin, Valium, I used to be on big Valium scripts…'. (Participant 052, OB)

Associations between drug use and crime are well documented, and despite conflicting perspectives on the strength of these associations and the direction of causality, a pervasive link between the two has been demonstrated across drug and crime types (see Casey, 2015). The findings of the current research suggest that for these participants, regular drug use and repeated engagement in burglary developed and escalated alongside each other, with both becoming habitual to varying levels in individual participants.

The Commission of the Offence

As with the cognitive processes discussed above (i.e. the distal and proximal decisions to offend, and the choice of burglary over other types of offending), when describing the process of target selection participants indicated a level of automaticity in the cognitive processes employed. In line with previous research (e.g. Logie, Wright & Decker, 1992; Nee at al., 2015; Nee et al., 2019;

Wright & Decker, 1994), participants found it hard to pinpoint exactly what they look for in assessing a property for wealth and opportunity, relying on a 'gut instinct' (Participant 009), as mentioned above. In line with Klein's work on expertise in fire commanders (Klein, 2009; Klein, Calderwood & Clinton-Cirocco, 2010), what lay people commonly call gut instinct or intuition can be explained by tacit, automatic retrieval of scripts from long-term memory. The following quote reflects this regarding target selection:

> 'I don't know what it is, like, it sounds weird, but you just, kind of know, when you see the house you kind of know… I just tell like that's the one'. (Participant 037, YB)

Similarly, participants said they did not have to think about where to go once inside the

property: 'Nah, it's just wherever my feet take me'. (Participant 026, YB)

> 'I don't know what it is, I'm just confident innit, like, I just know what I'm doing like, I just go about, or I know, someone might hide things in there instead of there, like'. (Participant 037, YB)

The second quote above shows increased confidence associated with experience, as noted in Clare's (2011) sample of experienced burglars, and this self-efficacy was clear in participants' accounts of their natural ability to assess the criminogenic situation. The concept of 'instinct' arose spontaneously thirteen times, influencing participants' perceptions of themselves as successful burglars:

> 'Considering that I have been burgling for however many years, and been caught the minimalist amount of times, I... try to do work off my own gut instinct'. (Participant 028, OB)

Nee and Ward (2015) describe how this superior appraisal, recognition and enactment point towards the development of expertise in offenders. In addition to enabling more efficient and effective decision-making, and increasing the reward of burglary, expertise may also increase the individual's sense of agency and perception of their own abilities. Unconscious (i.e. not requiring explicit deliberation), and effective assessment of the environment was perceived to reflect a superior ability to see and feel things that others perhaps could not, and this was often described with pride. Anecdotes of times in which participants ignored their 'gut feeling' and were disturbed or apprehended were remarkably frequent. In general terms, a person's belief in their ability to perform well in any given task influences the course of action they choose to pursue (Bandura, 1997). Self efficacy in conventional pursuits has been linked to desistance (Maruna, 2004); however, Brezina and Topalli (2012) argue that it may also be developed in relation to offending paths. Accordingly,

expertise increases the individual's assessment of their offence related performance, and in turn their perception of their own competence and success. According to Brezina and Topalli (2012), this increases the offender's commitment to crime leading to a greater likelihood of persistence. **Strengths and Limitations of the Current Study**

The current research highlights the role that automaticity and habitual decision-making play in the key decisions to engage in, and potentially specialise in, residential burglary. The study also highlights the important role of affect in the early stages of the criminal career. It suggests that young burglars are motivated by a desire for excitement and the thrill of the crime, however over time the strength of this experience diminishes. Repeated involvement in burglary up to this point, however, results in habitual offending and an offence chain that appears below the full consciousness of the offender (like any practiced behaviour). Financial gain replaces excitement as a primary motivator, and those continuing to satisfy this through burglary may do so either because they feel limited to this as their only option, or because they frame their gained skills and experience as 'professionalism'. This interpretation is subjective, and others may be possible, but we believe the data indicates the importance of further research into the links between affect and cognition in the development of offending behaviour. An approach that considers such factors may be crucial in understanding and intervening with the motivation to burgle in the early stages of the 'criminal' career.

It is acknowledged that the use of an incarcerated sample with convictions for burglary may not be representative of (potentially more 'successful') active burglars (though the latter population also has its flaws as argued by Copes, Jacques, Hochstetler & Dickenson, 2015, and Nee et al., 2019). Confidentiality and anonymity were assured prior to gaining consent to reduce concerns regarding disclosure of information. In addition, while participants did have convictions for burglary, all had